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ADOLESCENT SOCIAL MEDIA USE AND WELL-BEING

Section A: The Views and Experiences of Adolescents on Social Media and Well-Being:

A Systematic Review and Qualitative Thematic Synthesis

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### **Summary of the MRP**

Section A: Presents a thematic synthesis and appraisal of literature, using a systematic search methodology of qualitative research on the views and experiences of adolescents of social media and well-being. The synthesis revealed four themes, each with positive and negative sides: connections, identity, learning and emotions. Each theme is explored and related to theoretical and extant literature. Clinical implications are provided around each theme, describing ideas of how to work positively with adolescents and social media, while negotiating potential drawbacks. Research recommendations are made concerning extrapolating the factors discussed by adolescents and how to enhance research quality in the area.

Section B: Presents a cross-sectional and longitudinal study of the relationship between social media and well-being, in a sample of 497 UK adolescents. Several stress and well-being hypotheses are tested, including the moderating roles of gender and self-esteem that is contingent on friendship quality, within a diathesis-stress model. Results show friendship contingent self-esteem to be significantly related to social media investment, and increased stress to significantly influence well-being change. Findings are discussed in terms of the link between contingent self-esteem and problematic social media investment, stress and well-being. Limitations are considered, and implications for future research and practice are provided.



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## **Section A: Literature Review**

The Views and Experiences of Adolescents of Social Media and Well-Being:

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### **Abstract**

The influence of social media on the health and well-being of adolescents has captured the attention of policymakers, clinicians and parents in recent years. Although several articles have synthesised aspects of the quantitative literature relating to this topic, as of yet, there has been no review of the qualitative literature. The current systematic review sought to review and synthesise studies which captured the views and experiences of adolescents of social media and well-being.

After critical appraisal, a thematic metasynthesis conducted across nineteen papers revealed four main well-being themes: connections, identity, learning and emotions. Each theme contained benefits and drawbacks for well-being. The findings are discussed in terms of their relation to well-being concepts and measurements found in the extant and theoretical literature.

Taken together, the views and experiences of adolescents suggest that social media and well-being are connected through a complex interplay of factors including, thoughts, emotions, behaviours and narratives that govern aspects of use. Clinical implications are provided around each theme, describing ideas of how to work positively with adolescents using social media, while negotiating the potential drawbacks. Research recommendations are made concerning extrapolating the factors discussed by adolescents, and how to enhance research quality in the area.

*Keywords:* Adolescents; well-being; qualitative; social media

### **Introduction**

In the last few years, several high-profile publications have indicated that since 2012, the prevalence of adolescent mental health difficulties has been rising in the English-speaking world (Fink et al., 2015; Sadler et al., 2018; Keyes, Gary, O'Malley, Hamilton & Schulenberg, 2019; Patalay & Gage, 2019). Similarly, national well-being statistics have shown that young people have also become increasingly unhappy during this time (e.g. The Children's Society, 2019). It is reasonable to assert, therefore, that the mental health and well-being of children has never been so high on the public agenda in many Western countries (Centre for Mental Health, 2019).

Many ideas have been advanced to account for these trends, including that adolescents today are simply more comfortable talking about well-being and seeking professional help (McCrae, 2018). An alternative hypothesis that has received considerable attention is that the widespread adoption of social media by adolescents between 2009 and 2012 has contributed to the reported rise in mental health problems and fall in well-being (Twenge, 2020). This suggestion has gained enormous public and political support, where in the UK an "All Party Parliamentary Group on Social Media and Young People's Mental Health and Wellbeing" was created in 2018 (Royal Society for Public Health, 2019). Politicians have called for more research into this topic, including 'a scientifically-rigorous evidence base so we can better understand the health impact of social media' (Department of Health and Social Care, 2019) and to identify how 'males and females differently engage with social media' (Scottish Government, 2020).

The current review aims to contribute to this discourse by synthesising qualitative research that seeks to understand the relationship between social media and well-being from the perspective of adolescents.

## **Definition of terms and context**

### **Social media**

The term ‘social media’ (SM) is defined as “forms of electronic communication through which users create online communities to share information, ideas, personal messages, and other content” (Merriam-Webster, 2020). SM is a term applied to an ever-growing and evolving set of internet platforms, most recognisably, Facebook. Other platforms include the microblogging site, Twitter, and Snapchat and Instagram, platforms that use photographs and ephemeral content. With each new platform comes different opportunities for interactive engagement and entertainment, all in real-time. The usage and capabilities of these platforms have grown exponentially in recent years (Bayera, Ellisonb, Schoenebeckb & Falk, 2016).

The rapid penetration of SM into everyday life warrants attention too. Most SM usage happens via smartphone, creating a context in which people are connected to multiple SM networks throughout the day (Droesch, 2019). Overall, 3.48 billion people (45% of the world’s population) use SM, while in the UK and USA, this figure is nearer 70% (Kemp, 2019). The current review acknowledges the multi-platform nature of the digital landscape and thus does not distinguish between individual platforms.

### **Adolescence**

Adolescents can be considered the most devoted SM users. Recent figures show that almost all 16 to 24-year-olds use SM (96%; ONS, 2017). Although the exact age parameters surrounding ‘adolescence’ are debated (Sawyer, Azzopardi, Wickremarathne, & Patton, 2018), the current review defines an adolescent as a person between the ages of 10 to 19, aligned with the World Health Organization definition (WHO, 2006).

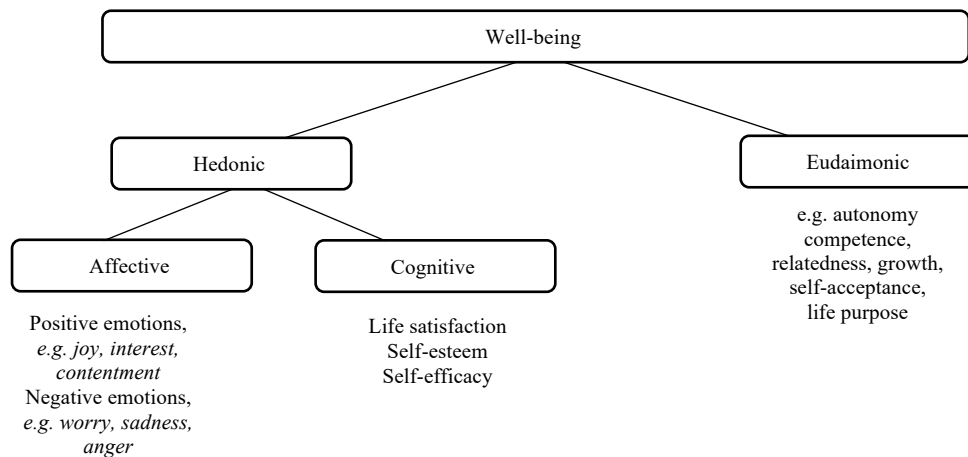
There are particular developmental themes which require consideration in regard to adolescent’s coming-of-age on SM in typical western contexts. During adolescence, young people go through a rapid period of physical development, acquire new cognitive skills

(including the ability to think in abstract ways) and take on an increasing amount of personal, emotional, and financial independence from their parents (Christie & Viner, 2005). It is also the time when an individual begins to explore personal and sexual identity and also begin to define others in relation to themselves (Erikson, 1968; Jenkins, 2014).

Neurologically, several developments associated with prefrontal cortex functioning related to skills such as planning, consequential thought and decision-making are in progress and are typically achieved by the end of the adolescence phase (Sowell, Thompson, Holmes, Jernigan & Toga, 1999; Sowell et al., 2003; Johnson, Blum & Giedd, 2009). It is argued that adolescents are highly sensitive to acceptance and rejection through SM and that their heightened emotional sensitivity, impulsivity and protracted development of reflective processing and cognitive control (impulsivity) may make them specifically reactive to emotion-arousing media, having consequences for well-being (Crone and Konijn, 2018).

### **Well-being**

Despite much interest in the measurement of well-being by policymakers and those in the health, sectors, there is no single recognised definition of ‘well-being’ (Maddux, 2017). The term is often used in everyday language to signify happiness or life satisfaction. Lopez (2011) described well-being as signifying ‘flourishing mental health’ and ‘psychological functioning’. Much academic literature uses it as an umbrella term to describe the ‘quality of life’ of people within a specific society (Rees, Goswami & Bradshaw, 2010). A more detailed approach was taken by Ryan and Deci (2001), who separated well-being into ‘hedonic’ and ‘eudaimonic’ components (Figure 1). Hedonic well-being describes subjective happiness, regarded as pleasure attainment versus pain avoidance. It is measured using an assessment of subjective well-being (SWB), which captures people’s appraisals of their lives, such as cognitive judgments of satisfaction, reported self-esteem and affective evaluations of mood (Diener & Diener, 1995; Diener & Lucas 1999).

**Figure 1** *Concept map for measurement of well-being*

Eudaimonic well-being is described as emphasising personal meaning and self-realisation. It has been defined and measured in interrelated ways; Ryff and Keyes (1995) incorporated a domain-based approach to understand well-being, including autonomy, personal growth, self-acceptance, and life purpose. Ryan and Deci (2000) asserted that an individual could achieve well-being through the fulfilment of autonomy, competence, and relatedness. In line with previous reviews (Best, Manktelow, & Taylor, 2014), both hedonic and eudaimonic well-being were considered when extracting and interpreting data in this review.

Researchers attempting to understand well-being from the perspective of children and adolescents have recently begun to use open-ended, qualitative methods that position young people as experts on their lives and active agents in appraising their well-being, representing a significant development within the field (Mason & Danby 2011; Mihálik et al., 2018). This approach goes beyond the pre-defined concepts of well-being and conforms with current practice (Navarro et al., 2017). Accordingly, the present review adopts both an inductive and deductive approach, by capturing the views and experiences of adolescents towards SM and well-being in their own words.

**Existing research**

The relationships between SM and adolescent well-being has been extensively studied over the last decade. A recent systematic map of the research reported findings from eighteen systematic literature reviews (Dickson et al., 2018). Findings from this show that most research dates from 2014 and employed a wide variety of well-being outcomes, including commonly recognised mental health outcomes such as depression and anxiety, as well as self-esteem, loneliness, social connectedness and life satisfaction. Many studies are cross-sectional contributing to a noted lack of qualitative evidence synthesis exploring children and adolescent's own perspectives and experiences of screen-based technologies, including SM. (Dickson et al., 2018). The key findings emerging from this literature and their theoretical basis are discussed next.

**Screen time and displacement**

Given the previously mentioned relationship between adolescent development and the opportunities afforded by SM, one may assume a justifiable scientific rationale for research on this topic beyond that of a 'moral panic' about the impact of new technology on young people's lives (Bell, 2010), and any observed similarities in the timeframe between the fall in well-being and the rise of SM (Twenge, 2020). However, many existing studies have not always been explicit in the specific theoretical concepts used to support their work (Erfani & Abedin, 2018). Much has focussed on simple relationships between well-being and amount of use (e.g. screen-time). Reviewing this literature, Keles, McCrae and Grealish (2020) report a contrasting set of findings, with two studies showing no relationship between time spent on SM and psychological distress, some showing a positive relationship, and one reporting an inverse correlation. A more consistent pattern of results related to SM use and body image concerns was reported in a review of longitudinal research (Course-Choi, 2019a). Some have drawn on the 'displacement hypothesis' to account for observed relationships (Liu, Wu & Yao, 2016;

Suchert Hanewinkel & Isensee, 2015). This hypothesis suggests that time spent in front of screens may replace other health-promoting behaviours such as physical activity, sleep, loss of quality in social interactions on SM. Alternatively, the reverse of this hypothesis has also been used to argue that SM may augment an adolescent's social support and identity development (Seabrook, Kern & Rickard, 2016). Further understanding is likely to be developed through a more nuanced understanding of the types of SM behaviour adolescents engage in, beyond screen time.

### **Active/Passive use**

Some studies have differentiated between different types of SM use, in terms of active and passive engagement and impact on adolescent well-being. So-called 'active use' refers to SM activity involving direct exchanges with others, such as posting a selfie or a status update (Burke, Kraut & Marlow, 2011). On the other hand, 'passive use' describes observing other people's activity without engagement, such as scrolling through Instagram photos and Facebook posts (Burke, Kraut & Marlow, 2011). It has been observed in cross-sectional, longitudinal and experimental studies that active and passive SM use is related to different well-being outcomes, with trends showing passive use to be associated with lower levels of subjective well-being (Verduyn, Ybarra, Résibois, Jonides, & Kross; 2017). There is likely more to be discovered regarding these broad categories of use, especially regarding the contexts which may drive each type of behaviour.

### **Investment**

Other researchers have turned to examine the deeper relationship that adolescents may have with SM. Investment in one's SM platform (i.e. how emotionally connected one is to various SM platforms) has been shown to more strongly correlate with low mood and worry amongst adolescents in a few studies (Dumitrache, Mitrofan, & Petrov, 2012; 2012; Blomfield Neira & Barber, 2014). Research that moves beyond screen-time as a predictor, has led the way

into unpicking the types of behaviour that may give impact well-being. Despite this, one may inquire as to what influences some to become more emotionally invested in their SM, and why this may represent a potentially detrimental practice.

### **Identity and self-presentation**

Questions of self-identity, such as who we are and what we believe in are central to adolescents in Western societies (Davis, 2012). How these questions are pursued, understood and conveyed has implications for well-being, as positive sense of identity has frequently been linked to well-being (Berzonsky, 2003; Oyserman, & James, 2011, Chen, Boucher, & Kraus, 2011; Vignoles, 2011). Indeed, the formation of identity has long been described as a life-long developmental task fundamentally linked to well-being: "...an increasing sense of identity is experienced precociously as a sense of psychosocial well-being" (Erikson, 1968; Erikson 1980, p. 118). In relation to the current topic, a characteristic feature of SM is the ability to present one's identity in a manner of choosing in a public forum, and research has often focussed on the accuracy of information one chooses to convey about oneself to others.

Reviewing the literature related to self-presentation on SM, Twomey & O'Reilly (2017) showed that inauthentic self-presentation was consistently associated with low self-esteem and social anxiety, while authentic (positive) self-presentation was consistently associated with more positive emotional states, such as higher levels of self-esteem and perceived social support. These results relate to well-being literature, as one of the most important outcomes associated with self-esteem is SWB (Diener & Diener, 1995). Despite the large pool of data to conclude from, the associations reported provided limited information regarding the direction of the relationships under question. Understanding of the factors that may potentially mediate and/or moderate the relationship between SM and well-being outcomes is limited (Dickson et al., 2018).



**Rationale for the review**

Overall, much of the research that has investigated adolescent SM use and well-being has been cross-sectional, which has often not permitted a clear indication of the direction or nature of relationships under investigation. Often too, studies have overly relied on measuring limited outcomes (e.g. depression), at the expense of other constructs perhaps more well-suited to capturing well-being. As such, this has contributed to a dearth of evidence regarding the contexts and causal mechanisms that could underpin any relationships and other impacts on well-being.

In response, the need for a critically appraised synthesis of evidence about adolescents' direct experiences of SM and their well-being has been highlighted (Dickson et al., 2018). As qualitative research is often able to capture many of the nuances involved in direct experiences, a synthesis of current findings would likely provide valuable understandings of adolescent SM behaviours. The insights gained from the direct views and experiences of young people regarding the impact of SM are essential to develop valid questionnaires and support future research (Bartholomaeus, 2013).

**Review objective**

The objective of the current review is to redress the imbalances in the literature by foregrounding young people's voices. It aims to do this by critically appraising qualitative literature that can answer the question, what are the views and experiences of adolescents of SM and its relevance to their well-being?

## **Method**

### **Study design and registration**

The analytic approach taken was metasynthesis, a type of synthesis used to transform initial findings from multiple qualitative research investigations into more abstract, decontextualized results. Metasynthesis was selected as it has the dual purpose of summarising qualitative publications and generating new interpretations (Finfgeld-Connett, 2010). The form of metasynthesis adopted utilised a model of meta-ethnography, a form of synthesis suited to beliefs and experiences and understandings of complex social phenomena (Atkins et al., 2008).

It adhered to the procedures of thematic synthesis described by Thomas & Harden (2008). Thematic synthesis draws on the process of thematic analysis, a method that can be used to synthesise a range of qualitative methods (Braun, & Clarke, 2006). The review followed the recommended six stages of thematic synthesis: 1) defining the research question, the subjects, and the types of studies to be included; 2) identifying and selecting the studies; 3) assessing the quality of the selected studies; 4) analysing the studies, identifying themes, and translating themes between the studies; 5) generating the themes of the analysis and structuring the synthesis; 6) writing the review (Lachal, Revah-Levy, Orri, & Moro, 2017).

The protocol for this review was registered with the International Prospective Register of Systematic Reviews (Prospero; CRD42019156922) and complied with the ENTREQ guidelines (Enhancing transparency in reporting the synthesis of qualitative research; Tong et al., 2012).

### **Quality appraisal**

The Critical Appraisal Skills Programme (CASP, 2018) appraisal framework for qualitative studies was used to evaluate the research (Appendix 1). All reviewing was conducted by the author.

### Inclusion criteria

This review identified qualitative research studies that investigated the views and experiences of adolescents of SM regarding their well-being (as per the definition). Table 1 lists the inclusion criteria.

**Table 1** *Inclusion Criteria for Systematic Search*

Inclusion Criteria
Published in English
Published in or after 2006
Published in a peer-reviewed journal
Participants aged between 10 and 19, or the average age of up to 19 years old
Research based on social media practices, as per the definition <sup>a</sup>
Research containing the concept of well-being, as per the definition
Qualitative design
Non-specific population sample <sup>b</sup>

<sup>a</sup> Studies focussing on general internet use/online communication, gaming were excluded unless there was a clearly identifiable focus on social media use. <sup>b</sup> Studies focussing on a specific use of SM for a defined population or group were excluded, e.g. how chronically ill teenage patients manage their privacy on social media sites.

### Literature search

Searches of electronic databases PsycINFO, Medline, Web of Science and Assia were conducted on 7<sup>th</sup> February 2020. The search was pre-planned, and terms were informed by preliminary internet searches and previous reviews of adolescent well-being and SM use (Best, Manktelow, & Taylor, 2014). Key search terms were combined with Boolean operators ‘OR’ and ‘AND’, and exploded subject headings were used. The range of dates was limited from 1st January 2006 to current day, as 2006 is when Facebook became open to public use. Search terms are listed in Table 2.

Titles and abstracts were screened for relevance. Reference sections of retrieved studies and previous review articles were also searched. Figure 2 illustrates the review process and the number of papers found at each stage.

**Table 2** *Search terms used in the systematic search*

Search Topic	Specific terms used
Population	adolescen* OR teen* OR young people OR child* OR girl* OR boy* OR youth OR young person AND
Exposure	social media OR online social network* OR social networking site OR social network OR Facebook OR Instagram OR Snapchat OR Twitter OR Bebo OR Myspace OR digital technolog* AND
Outcome	well-being OR wellbeing OR life satisfaction OR social support OR social capital OR self-esteem OR self-efficacy OR mental health OR stress* OR depress* OR anxiety OR anxious* OR worry OR worrie* OR experience* AND
Methodology	case study OR constant comparison OR content analysis OR conversation analysis OR descriptive study OR discourse analysis OR ethnography OR exploratory study OR focus group OR grounded theory OR hermeneutic OR interview* OR narrative OR narrative analysis OR naturalistic study OR participant observation* OR phenomenology* OR qualitative OR qualitative method OR qualitative research OR thematic analysis OR IPA OR phenomenological OR view* OR experienc* OR opinion* OR percep* OR belie* OR feel* OR know* OR understand*

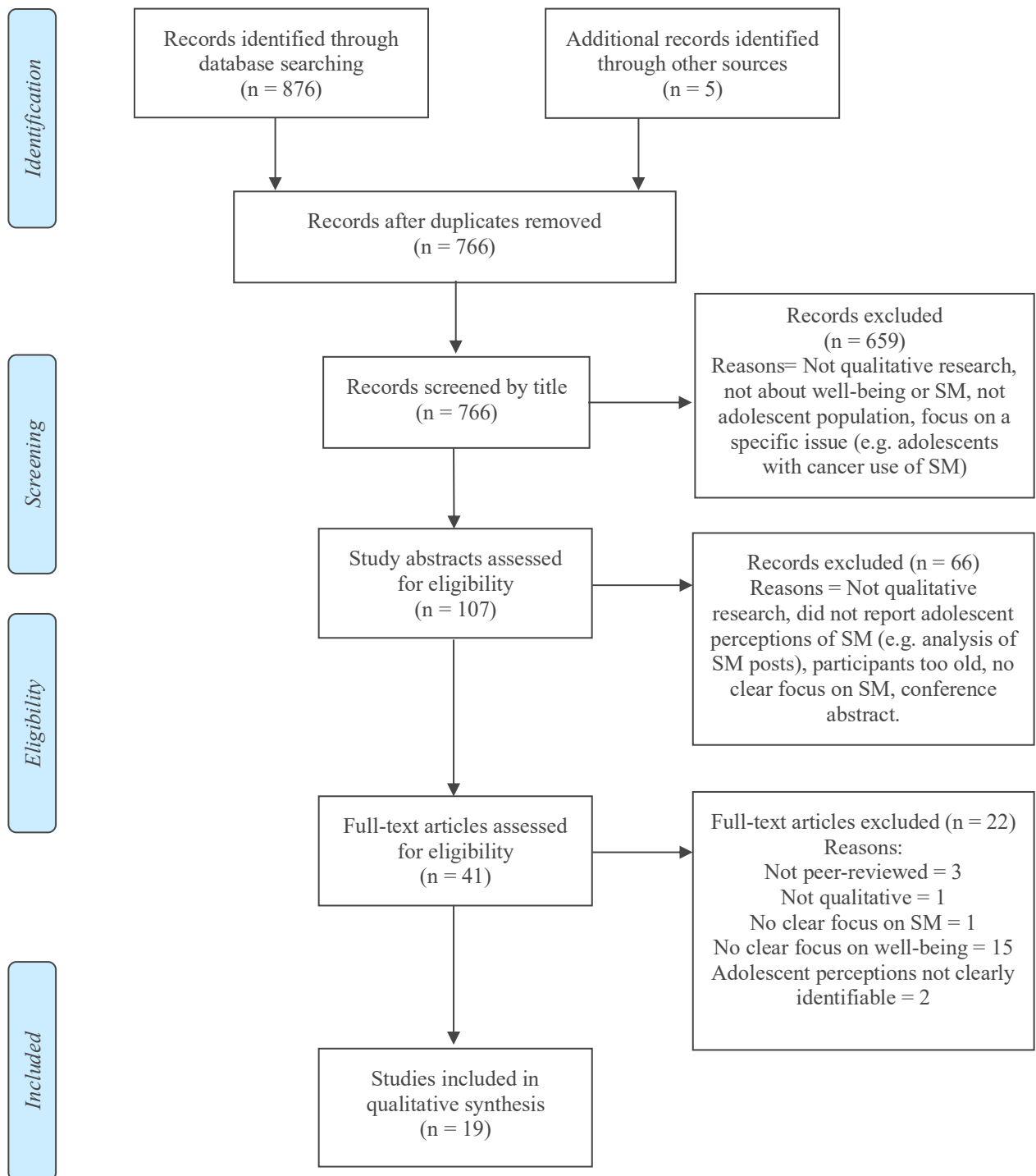
## Results

### Presentation of studies

In total, 881 references were collected, 766 after the removal of duplicates. After screening titles and abstracts, a further 725 articles were removed. Subsequently, 41 articles were read in full, of which 19 met the inclusion criteria. Specific exclusion issues concerned papers not having a clear focus on SM or well-being. Where studies included both qualitative and quantitative aspects, only the qualitative elements were reviewed. In studies where more than one group of participants was involved (e.g. adolescents and clinicians), only data originating from adolescents were extracted. The flow of information through the phases of the review is shown in Figure 2.

Subsequently, 19 studies were analysed, all published within the previous decade. Participants typically ranged from 11-18 years old. The age range in one study (Radovic, Gmelin, Stein & Miller, 2017) was 13-20 years old. This study was included as the average participant age was 16 years. Samples from general populations were typically recruited from schools. Three studies sampled adolescents who were accessing services for common mental health problems (e.g. anxiety or depression). These studies were included, as these papers were of high quality and provided several insights which the authors deemed applicable to general populations.

The 19 studies varied in their aims; some papers were broad in their approach (e.g. how SM impacts mental health), others focussed on specific aspects of SM (e.g. thoughts and feelings about self-images on SM). All papers included the direct views and experiences of adolescents regarding aspects of their well-being and a variety of SM platforms. Table 3 describes the characteristics of each study.

**Figure 2** *Flow of information through the different phases of a systematic review*

**Table 3** *Main characteristics of the included studies*

Study no.	Author (year)	Study location	Sample size, age range (mean), % female	Research topic and aims	Data collection	Social media platforms	Method of analysis
1	Baker & White (2011)	Australia	69, 13-18 years (14.64), 42%	To understand the reasons why teenagers don't use SM, their concerns regarding SM use	Written survey	Myspace, Facebook	Conceptual qualitative analysis
2	Bell (2019)	England, UK	35, 13-17 years (14.75), 60%	To understand how SM functions within adolescents' personal and social development; why adolescents create, share and respond to images on SM	Focus group	Image sharing; unspecified sites	Thematic analysis
3	Best et al. (2015)	Northern Ireland, UK	56, 14-15 years (N/A), 0%	To investigate the relationship between SM and the well-being of adolescent males	Focus group	General SM use; unspecified sites	Thematic analysis
4	Bharucha (2018)	India	30, N/A (18.4), N/A	To explore whether and to what extent SM comes in the way of well-being, contributes to addictive behaviour and other harmful social effects	Interview	Facebook, LinkedIn, Instagram, Twitter, Snapchat, Pinterest, Friendster, Hi5	Unspecified; 'an exploratory qualitative approach.'
5	Burnette et al. (2017)	USA	38, 12-14 years (13.14), 100%	To examine the nature and extent of early adolescent female engagement with SM and their perceptions of its impact on body image	Focus group	Instagram, Snapchat, Pinterest, Vine, Tumblr	Thematic analysis
6	Calancie et al. (2017)	Canada	8, 13-15 years (15.5), 50%	To investigate the narratives surrounding the negative aspects of Facebook and the mechanisms through which it could contribute to the anxiety disorders.	Focus group	Facebook	Interpretive inductive analysis
7	Chua & Chang (2016)	Singapore	26, 12-16 years (14.5), 100%	To uncover the underlying meanings accounting for the interplay of self-presentation and peer comparison on SM.	Interview	Instagram, Facebook, Twitter, Tumblr	Thematic analysis
8	Davis (2012)	Bermuda	32, 13-18 years (15.5), 57%	How does online peer communication about self-disclosure of personal feelings on SM shape adolescents' experience of a sense of belonging and self-disclosure (identity).	Interview	Facebook	Thematic analysis
9	Duvenage et al. (2020)	Australia	16, 13-16 years (N/A), 37%	To describe adolescents' identified motivations and experiences of engaging with their online environments in order to manage their emotions and stress.	Focus group	Facebook, Skype	Thematic analysis

10	Jong & Drummond (2016)	Australia	28, 12–14 years (N/A), 100%	To understand the effect of immediacy (of SM communication) on the development of identity	Focus group	Facebook, Tumblr	Thematic content analysis
11	MacIsaac et al. (2018)	Scotland, UK	41, 11-18 years (N/A), 54%	To investigate young people's use of online social spaces within a school context.	Focus group, interview	Facebook, Twitter, Instagram, Snapchat, WhatsApp	Thematic analysis
12	O'Reilly (2020)	England, UK	54, 11-18 years (N/A), N/A%	What do adolescents (and mental health practitioners) think of social media in relation to mental health?	Focus group	General SM use; unspecified sites	Thematic analysis
13	O'Reilly et al. (2018)	England, UK	54, 11-18 years (13.96), 44%	To investigate how SM is viewed in terms of well-being by adolescents, find how they think of social media and its relevance to mental health and emotional well-being.	Focus group	General SM use; unspecified sites	Thematic analysis
14	Radovic et al. (2017)	USA	23, 13-20 years (16), 78%	Purposes for using SM, examples of times adolescents felt SM use was positive/negative, whether the negative experiences with SM adversely affected mood, how SM use may be related to low mood.	Interview	Facebook, Tumblr, Twitter, Instagram	Qualitative description, content analysis
15	Scott et al. (2019)	Scotland, UK	24, 11-17 years (14.3), 50%	To provide a deeper insider understanding of what drives adolescents' social media engagement at bedtime, how this may influence bedtime social media habits and experiences that negatively impact on sleep.	Focus group	Snapchat, Instagram, Facebook, Twitter, WhatsApp	Thematic analysis
16	Singleton et al. (2016)	England, UK	12, 14-18 years (15.3), 75%	What are adolescents' perceptions of how SM use interacts with well-being and distress? How do young people use SM for self-disclosure and self-presentation in relation to their emotional experiences?	Interview	Facebook, Twitter, Instagram, Tumblr, Pinterest, Snapchat	Grounded Theory
17	Throuvala et al. (2019)	England, UK	42, 12–16 years (13.5), 48%	To investigate the uses, motivations, and values that are ascribed to screen time and SM use among adolescents.	Focus group	Instagram, Snapchat, YouTube, Facebook	Thematic analysis
18	Vermeulen et al. (2018)	Belgium	22, 14-18 years (N/A), 59.1%	To understand adolescent perspectives and learn which communication modes they use to share specific emotions and especially why they share in that way.	Interview	Twitter, Facebook, Snapchat, Instagram	Thematic analysis
19	Weinstein (2018)	USA	26, 13-18 years (15.8), 61.5%	To understand how daily interactions with social apps influence adolescents' affective well-being.	Interview	Instagram, Snapchat, Facebook, Tumblr, Twitter	Inductive thematic analysis



An evaluation of the studies with the CASP found overall good results. A summary of the quality appraisal is shown in Table 4 and in full in Appendix 2.

Table 4 CASP Summary, by Criterion

Criteria	Example	Quality assessment of studies																					
		Met criterion = <div><div></div></div> (N papers)																					
		Partially met criterion = <div><div></div></div>																					
		Did not meet criterion = <div><div></div></div>																					
Aims	Explicitly stated aims/ objectives of the research	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	19					
Method	Appropriate use of qualitative methods	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	17	<div><div></div></div>	2			
Research Design	Justification of the specific research design	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	8			
Sampling	Appropriate sampling strategy, description of recruitment	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	15	<div><div></div></div>	3	<div><div></div></div>	1	
Data collection	Appropriate description of data collection methods	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	8		
Reflexivity	A critical examination of researchers’ own role and bias	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	13		
Ethical Issues	Evidence of approval by an appropriate body	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	10	<div><div></div></div>	2		
Data Analysis	Adequate and in-depth description analysis, sufficiently rigorous data analysis	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	5	<div><div></div></div>	3		
Findings	A clear statement of the findings, discussion of evidence, credibility, integrity	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	13	<div><div></div></div>	4	<div><div></div></div>	2

## **Methodological critique**

### **Aims and method**

Overall, the selected studies clearly set out their research aims, most with justifiable use of a qualitative methodology. Two studies gave imprecise justifications for the use of qualitative methodology, though both were judged to be suitable in the review.

### **Research design**

Several studies failed or only partially justified the specific research design used, although this may be explained by editorial constraints in publishing. Data were collected most often by focus group or interview, sometimes using visual aids to remind participants of specific SM sites. Thematic analysis was the most common form of analysis. Though generally producing stimulating themes, the studies that used alternative methods tended to provide more in-depth analysis and insights into processes and mechanisms (e.g. grounded theory- Singleton et al., 2016).

### **Sampling and data collection**

Most papers either met or partially met the CASP criteria in describing how and why a certain participant were selected, why the participants they selected were the most appropriate and discussed recruitment issues. More generally, however, little attention was given to limitations of adolescent self-reflection and self-report. Data were collected from participants aged between 11-18 years old. During these years, adolescents will go through significant physical, psychological and behavioural changes as well as experience external social changes, all of which will impact on perceptions of what constitutes well-being (Rigby, Hagell, & Starbuck, 2018). It is also relevant to consider the development of emotion recognition and regulation, and adaptive coping skills when considering adolescent self-reflection, as adolescents may have a limited capacity, relative to adults, to reflect on sensitive topics and to do so without experiencing some degree of distress, potentially restricting feedback (Spear,

2000). Therefore, it would be important to preserve a developmental lens when considering adolescents reports of well-being issues in terms of both content and capacity to reflect on certain topics. No study appeared to do explicitly do this, for example, by stratifying their sample by age group, however some studies stratified participants by gender or friendship groups, which did appear to support data collection.

It was striking that studies that explicitly asked adolescents about well-being and SM use often reported frustrations in data collection. For example, O'Reilly et al. (2018) described how 'Many of the adolescents were unable to define mental health clearly, often confusing it with mental ill-health. Others simply stated that they did not understand the term... some participants said that they did not believe that mental health could be positive' (p. 4). An apparent consequence of this was that adolescents often relied on less specific, third-party attributions, rather than reflecting on personal experiences. This issue, however, appeared less problematic when researchers engaged with participants over specific discrete issues, such as image sharing practices (Bell, 2019) and SM use before bedtime (Scott et al., 2019).

### **Reflexivity and ethical issues**

Author reflexivity was also a common absence, an issue problematic in an often highly contested and polarised subject area (e.g. Haidt & Allen, 2020). There were, for example, clear examples of author bias reflecting strong concerns about SM in (Bharucha, 2018), so it was unclear how this may have impacted on data collection, interpretation and overall integrity of findings. Accordingly, studies of poorer quality contributed less to the review, in line with guidance for conducting meta-ethnographies (Bondas & Hall, 2007).

The lack of attention to specific ethical issues was also of notable concern in a large number of papers. Despite receiving approval, relatively few studies described measures taken to debrief or support young people who participated in sensitive conversations that referenced distressing elements of well-being, such as self-harm and suicide. Debriefing represents an

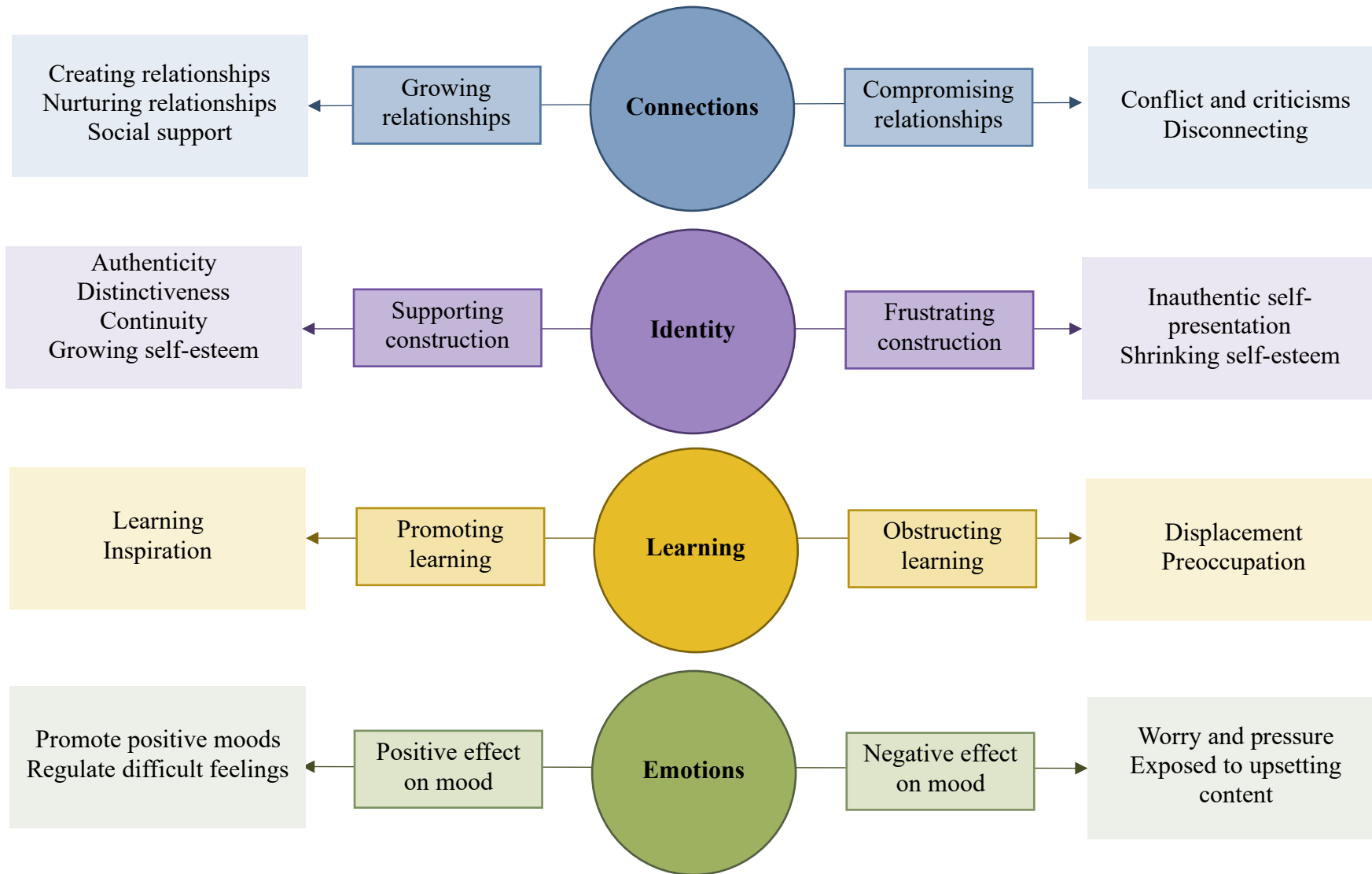
essential consideration, given the sensitive nature of the topic area and age of participants (Powell, Fitzgerald, Taylor & Graham, 2012).

### **Vale of Research**

The CASP invites reviewers to appraise the value of research, in terms of whether the researcher discusses the contribution the study makes to existing knowledge, if they identify research avenues, or considered how the findings may be transferred to other populations. Twelve of the papers met at least one of these criteria, most often in highlighting the novel and valuable findings their study had produced or in suggesting ideas for future though only two papers (Radovic et al., 2017; O'Reilly, 2020) discussed the issues relating to the transferability of their finding. Notably, Calancie, Ewing, Narducci, Horgan and Khalid-Khan (2017) incorporated clinical strategies into their thematic analysis.

### **General critique**

As a body of the literature, overall study quality using the CASP was considered to be high. Studies were drawn from several countries including the UK and USA, Australia, Canada, Singapore, Bermuda and Belgium. Given the global reach of SM, it was welcome to see related studies from non-western countries such as India. Social class and ethnicity were not discussed or accounted for in any of the included papers, despite findings that SM divides users along class, race and cultures (Boyd, 2009).

**Figure 3** *Thematic Map*

## **Thematic analysis**

### **Detailed methods for thematic synthesis**

The thematic analysis took the form of three stages; a free line-by-line coding of the findings of primary studies; the organisation of these ‘free codes’ into related areas to construct ‘descriptive’ themes and the development of ‘analytical’ themes (Thomas & Harden, 2008).

During the first and second stages, the original studies were entered into a database using NVivo (QSR International Pty Ltd, 2015). The principle investigator then coded the studies inductively according to meaning and content (illustrated example in Appendix 12 and 13). Line-by-line coding also enabled the translation of concepts between studies to create a bank of codes. The codes were then grouped into a hierarchical structure based on their similarities and differences.

The third stage of synthesis involved going beyond the initial codes to create analytical themes. The principle investigator and two project supervisors met together where possible themes and groupings were discussed. The process began sorting codes into two categories-ways in which SM could support or threaten well-being. Following this, codes were grouped together into themes which were broadly derived from ‘hedonic’ and ‘eudaimonic’ well-being concepts until agreement was reached (Appendix 14).

### **Themes**

Four central themes relating to adolescent well-being were inductively developed from the analysis: 1) connections, 2) identity, 3) learning, and 4) emotions. Each theme related to a different component of well-being and contained several subthemes detailing how adolescents’ SM use either supported or compromised their well-being. A thematic map is presented in Figure 3. Additionally, Appendix 3 presents a table displaying support for each theme across individual papers, and Appendix 4 shows themes with supporting quotes.

## 1. Connections

The theme ‘connections’ described how SM either grew and supported or came in the way of the relationships that adolescents held between their peers, friends and their family. This theme was referenced in all but one paper.

### *Growing relationships- creating, nurturing relationships and social support*

In terms of supporting well-being, nine papers described how adolescents used SM to interact with others who share similar interests and build new friendship groups. Some young people discussed the benefits that SM held over ‘offline’ opportunities to make friends in terms of negotiating shyness (Singleton, Abeles & Smith, 2016). Creating relationships was perceived to have other benefits further to the direct advantage of companionships, including helping to build intimacy, popularity and increased social standing (e.g. MacIsaac, Kelly & Gray, 2018). SM was also described as a useful tool to maintain and nurture social groups created outside of SM. This also included keeping in touch with family members and friends who lived long distances away (Radovic et al., 2017). The SM space offered advantages beyond traditional modes of communication, allowing groups to convene on mass to talk and to enjoy media together, share jokes and reflect on experiences as a group (Davis, 2012; Bell, 2019).

Adolescents in seven of the papers also talked about the role of connections on SM as a valued source of support. This could be receiving positive affirmation through a comment or finding comfort from connecting with a familiar friend after a stressful experience (Best et al, 2015). Some young people described SM as a preferred avenue of support over traditional routes such as parents or counsellors. They talked about how they had been contacted with messages of support or solidarity by previously unknown SM users who were replying to a question or hashtag they had posted. Other adolescents talked more generally about the sense of reassurance that SM gave them by just knowing that there were others out there: ‘you notice that there’s thousands all across the world in the same boat as you’ (Singleton et al., 2016).

***Compromising relationships- conflict and criticisms, disconnecting***

SM could also appear to negatively impact connections, as shown in thirteen papers. Adolescents gave multiple examples of arguments, criticisms and abuse all arising from SM. The most common examples of this were bullying; some adolescents described first-hand experiences of receiving threats while others spoke more generally about a culture of bullying and hostility online between peers. At a more general level, adolescents described an atmosphere of criticism and negativity during some interactions. Sometime arguments could be triggered by disagreements online, while another paper gave an example of ‘real-life’ offline incidents spilling over into SM (Calancie et al., 2017). Such behaviour was often linked by adolescents to anonymity, impulsivity, disinhibition and miscommunication, factors that were deemed more prevalent in online than offline communication.

Adolescents also referred to a more passive form of relationship difficulty on SM, that of feeling ‘disconnected’. Participants in Calancie et al. (2017) also spoke of the burden of being ‘tied’ to former friends or ex-partners through SM. A lack of attention in the form of feedback could leave some feeling rejected or ‘un-liked’. Participants in Scott, Biello & Woods (2019) referenced a feeling of ‘paranoia’ that they were being talked about online or excluded from something occurring somewhere else on SM, while adolescents in Weinstein (2018) described feeling ‘excluded’ when witnessing photos of friends getting together without them.

**2. Identity**

The second theme, ‘identity’, described the way adolescents were either supported or frustrated on SM in their efforts to move towards certain identity states, which, when met were likely to have positive implications for well-being (Vignoles et al., 2006). Adolescents in thirteen of the papers made comments that could refer to identity processes, describing aspects of SM that supported authenticity, grow self-esteem, provided life continuity and allowed them



to exhibit distinctiveness. These states can guide the processes of identity definition and enactment

### ***Supporting identity construction***

Adolescents in twelve of the papers appeared to describe the way SM allowed them to express themselves in a way that accessed their true, ‘authentic’ self. This was voiced by some as coming ‘out of their shell on Facebook’ (Best et al., 2015) or putting ‘the self out there’ (MacIsaac et al., 2018). Authenticity on SM appeared to be facilitated by the various mediums available; the ability to write and edit thoughts before posting them, using mixed media (e.g. words and images) to capture a mood state, or through the privacy that some SM platforms afford (e.g. Snapchat; Throuvala, Griffiths, Rennoldson & Kuss, 2019). Three of these papers also referred to the role that SM audiences play in this process, with unknown spectators witnessing the expression of self, which in turn produced cathartic or empowering feelings for the author.

The opportunities available on SM to develop or grow and develop one’s self-esteem was referenced by adolescents in six of the papers. Consistent with the literature that supports the association between self-esteem and well-being, adolescents described feeling ‘confident’ in themselves (Jong & Drummond, 2016), feeling ‘good about yourself’ (Bell, 2019) or helping to ‘build a positive self-image’ (Chua & Chang, 2016) in relation to the feedback they received to their photographs, suggesting that SM appeared related to positive self-evaluation.

SM also appeared useful in terms of expressing ‘distinctiveness’, with adolescents in four papers detailing how SM allowed them to distinguish themselves from others. Some talked about the purpose of photos, as a way to ‘express who you are’, emphasising the need to try and ‘be different in your photo’ (Bell, 2019) or ‘(stand) out from the crowd’ (MacIsaac et al., 2018). In some instances, ‘distinctiveness’ involved displaying material possessions, which could be used symbolically to display such features as wealth. The adolescents interviewed in

Weinstein (2018) discussed their excitement in sharing ‘new ideas’ over SM or the enjoyment of discovering a peer’s secret talents through SM.

In one paper (Weinstein, 2018), some adolescents described how SM allowed them to track continuity of their identity over time. This was described as noticing how one’s personality had ‘developed’ or ‘progressed’ when looking back at old photos on SM or ‘curating a digital footprint’. These processes could be said to support well-being, as described by the author as eliciting ‘positive emotions related to a sense of identity affirmation’.

### ***Frustrating identity construction***

Identity construction could equally be frustrated, likely having negative implications for well-being. Eight of the nineteen papers described ways that SM use could frustrate attempts to present an authentic version of the self. In one example, SM activity could lead to behaviours that adolescents later judged to be inauthentic, such as bullying or being mean to others, things that they felt did not represent who they were offline (Singleton et al., 2016). Other people talked more generally of feeling suspicious of others who used photo editing tools, possibly to ‘disguise’ who they were (Throuvala et al., 2019) or referenced how it was possible to deliver more ‘sneaky’ forms of communication via SM rather than honestly face to face (Vermeulen, Vandebosch & Heirman, 2018). In other examples, adolescents described creating a ‘safe’ and acceptable SM form of themselves, by checking with themselves or others before posting whether their expressive post was in keeping with their SM character.

Six papers described how SM could negatively impact self-esteem, sometimes directly. Participants in Bell (2019) described how repeated self-scrutiny before sharing selfies could mean that ‘self-esteem, like confidence, is gone...down the hill’. Consistently across six of the papers, adolescents appeared to base their self-worth on the feedback they received. This went beyond feeling happy or sad, as not having a photo sufficiently liked, or not receiving enough positive comments mean that friends are communicating that one is ‘ugly’ (Chua & Chang,

2016) or unlikable (Singleton et al., 2016). Edited selfies were a way to shore up ‘likes’, which represented units of measurement, despite there being no clear guidance on how many “likes” constituted enough. This ‘heightened sensitivity to social information’ (Bell, 2019) could be seen as having a detrimental impact on some adolescents’ sense of self-worth.

### **3. Learning**

The theme ‘learning’ describes how adolescents’ SM use either supported or obstructed education. Education and opportunities to learn are often considered necessary components of well-being, providing for one the necessary tools and skills to achieve in life, creating a protective factor against psychosocial adversity and enhancing self-efficacy and self-esteem, constructs that can support well-being in adolescents (Pajares, 2006; Mihálik et al., 2018). Participant views relating to learning were coded in eight papers.

#### ***Promoting learning and inspiration***

Adolescents described how SM could operate as a ‘window to the world’, with practical uses for assisting in homework. Specifically, the live nature of SM (‘adding new stuff’) appeared to make it enticing, and it was seen as ‘broadening’ and ‘interesting’ (Throuvala et al., 2019). SM was described in five accounts in Weinstein (2018) as promoting learning through the breadth and depth of information available. It also allowed adolescents to become tuned into issues of politics and social justice, such as the ‘#BlackLivesMatter’ movement. Aside from more serious topics, adolescents also described how SM inspired them in areas such as fashion, fitness and presentation skills (Chua & Chang, 2016; Singleton et al., 2016; Bell, 2019).

#### ***Obstructing learning***

Five papers provided adolescents’ accounts of the ways that SM could potentially obstruct learning. The obstruction could be seen to occur through preoccupation with certain aspects of SM, such as investing time and effort pursuing ‘likes’ (Bell, 2019), capturing the

perfect photo (Chua and Chang, 2016) and also dominating the conversation at school, or constantly intruding into lessons through it's 'always on' aspect (MacIsaac et al., 2018). Calancie et al. (2017) described how adolescents found it tricky to spend time alone to reflect, without the intrusion of SM notifications. Adolescents were more explicit in describing the ways SM disrupted classroom learning in Bharucha (2018), stating that attendance at school was problematic 'after logging off at 4 am' and linking SM distraction to a 'fall in grades'.

#### **4. Emotions**

A fourth theme, 'emotions' described the ways that SM could impact on emotional experiences, both positively and negatively. The subjective appraisal of one's mood state is a central component of well-being alongside cognitive appraisals of life satisfaction (Diener, 2000). References to appraisals of emotional experiences appeared across 18 of the papers.

##### ***Positive effect on mood***

Adolescents in five studies described ways in which SM seemed to promote positive moods. SM was described as lifting moods, producing feelings of 'excitement' (Jong & Drummond, 2016), being 'happier' (Bell, 2019; Weinstein, 2018) and mood being 'higher' (Radovic et al., 2017) or feeling 'better' (Throuvala et al., 2019). Adolescents in these papers also described SM as being entertaining, a source of laughter. Adolescents described experiences similar to positive emotional contagion, where witnessing another emotional reaction produced a similar reaction: "“Yeah, it (looking through SM) makes me feel happy. Seeing someone else happy kind of makes me happy”" (Throuvala et al., 2019).

In six papers, adolescents described how they used SM to help regulate negative emotions. Adolescents in Duvénage et al. (2020) described how they sought out SM opportunities to manage annoyance, anger and sadness. SM was frequently described as an antidote to 'boredom' by adolescents in Throuvala et al. (2019). The most referenced form of emotional regulation was stress management, with adolescents in four papers describing SM

as a tool that can help one unhook from busy, challenging lives- ‘If I’m having a stressful day or something—it’ll help me laugh and help me unwind a bit’ (Weinstein, 2018).

### *Negative effect on mood*

For many adolescents, SM represented a source of worry and pressure. In almost all papers (N=16), adolescents described the ways that SM could lead to worries and fears. These were often related to fears about being judged or having behaviours scrutinised. Such behaviours could include updating a status, posting an opinion or uploading a photo of themselves. Adolescents also spoke of the fear that others may be talking about them on SM or posting unflattering photos, with worry often associated with increased ‘checking’ (Weinstein, 2018) or ‘curiosity’ (Singleton et al., 2016) of SM activity. When photos were posted, adolescents described frequently checking to see how ‘well’ they had performed, with too few likes associated with frustration or embarrassment (Chua & Chang, 2018). Adolescents in three papers also described worry associated with perceived parental intrusion into their SM world, something that they were keen to avoid- ‘It like gives me anxiety whenever my parents are like ‘okay, I’m gonna just like check something’ and they like actually check my computer history’ (Burnette, Kwitowski & Mazzeo, 2017).

Many adolescents expressed troubling thoughts about the frequency of their use, describing their pattern of SM behaviour as ‘dependent’ (O’Reilly et al., 2018), ‘addicted’ (Radovic et al., 2017), ‘compulsive’ (Singleton et al., 2016) and emphasised the psychological need to ‘check’ (Throuvala et al., 2019; Weinstein, 2018). Adolescents also expressed more general concerns about the consequences of leaving digital artefacts, such as embarrassing photos or comments, material that could be duplicated and disseminated without the authors’ knowledge (Vermeulen et al., 2018).

SM also represented a source of pressure for several adolescents across the studies. Adolescents in three papers spoke about the pressure to have SM, to the extent that not having

SM was ‘unheard of’ (Scott et al., 2019). Not being on SM was linked to a belief that it would result in exclusion from offline social circles (Singleton, 2016). Pressures to share, stay connected (‘in tune with my group’; Bharucha, 2018) and respond immediately to contacts were reported by adolescents. Expectations to reply ‘immediately’ to messages were linked by one author to feelings of distress (e.g. Calancie et al., 2017), and repeatedly cited by adolescents as a barrier to switching off and getting to sleep in Scott et al. (2019): ‘Is there a way where I can justify leaving? Can I say “look, I’m tired”?’

A further way that adolescents linked SM to negative mood was through encountering upsetting content online. This was reported in four studies as coming through exposure to distressing content, including images or posts. This was sometimes relational, such as seeing updates about former partners in new relationships that could upset (Calancie et al., 2017). Three papers reported accounts of adolescents describing coming across graphic self-harm images or through reading accounts of others ‘expressing how depressed they are’ (Radovic et al., 2017; Singleton et al., 2016; Weinstein, 2018). Other papers described negative emotional contagion, whereby sad upsetting posts by others triggered similar feelings of being brought ‘down’ (O’Reilly et al., 2018) or ‘guilty for not helping’ (Singleton et al., 2016).

## **Discussion**

This review sought to appraise and synthesise the qualitative literature that could answer the question, what are the views and experiences of adolescents of SM and its relevance to their well-being? It did so through a systematic literature search, quality appraisal and thematic synthesis. The 19 identified papers gave rise to four themes, named connections, identity, learning and emotions.

### **The views and experiences of adolescents of SM and well-being**

#### **Connections**

The theme of ‘connections’ was present in all but one the 19 papers. The theme accounted for web of interpersonal connections that adolescents described creating and harnessed on SM. As with all four themes, ‘connections’ had positive and negative sides. Positively, connections were described as creating and nurturing relationships, encouraging a context whereby social support could be leveraged. On the other hand, adolescents in several papers described a hostile SM context, in which existing relationships were compromised through criticisms and conflict. Connections seemed to be undermined too, through SM posts that led to the sense of being excluded and disconnected from friends.

The importance of positive connections can be seen as central to several well-being theories. For example, Ryff (1989) described how ‘positive relations with others’ is a key dimension of well-being. Ryff’s model proposes that individuals who experience warm, satisfying, trusting relationships are more likely to report higher well-being than those with few close, trusting relationships. Within the extant literature, researchers have identified how ‘perceived online social support’, is related to higher levels of life satisfaction (Manago, Taylor & Greenfield, 2012; Nabi, Prestin, & So, 2013; Oh, Ozkaya & LaRose, 2014), which is predicted to mediate the relationship between SM use and well-being (Erfani & Abedin, 2018). Conversely, while there exists a large body of literature exploring the more extreme forms of

relationship discord on SM, such as cyberbullying (Aboujaoude, Savage, Starcevic, & Salame, 2015), researchers are also at an early stage of investigating adolescents' experiences of online interpersonal rejection and exclusion (Landau, Eisikovits, & Rafaeli, 2019).

### **Identity**

'Identity' was a theme captured the various SM activities that adolescents participated in, that seemed to both support and frustrate adolescents' identity formation. Adolescents across 13 papers described how they used SM to support the construction of identity. These identity-forming behaviours appeared to cluster around some recognised 'domains' of identity construction (Goossens, 2001), such as displaying distinctive qualities to peers which allowed them to distinguish themselves from others, growing self-esteem and value in their worth, and use historical posts to track continuity of the self over time. Another way could be seen in how some adolescents revealed they used SM to express 'authenticity', a display that sometimes occurred in the presence of a supportive, anonymous audience, capable of witnessing and encouraging identity expressions.

Despite these apparent benefits, adolescents also appeared to describe numerous examples of how SM could frustrate identity construction. For example, adolescents within the papers commonly described how self-esteem could be undermined by unsupportive or lack of feedback from friends. This apparent heightened sensitivity to feedback from friends is developmentally congruent with the life stage that many of the participants were in, though the observed subsequent impact on self-esteem for some and not others is less clear (Rubin et al., 2006).

Identity, in terms of its construction and presentation has relevance to well-being. The satisfaction of certain identity-motivated behaviours such as those described here (e.g. developing self-esteem and distinctiveness) has been hypothesised to have positive implications for well-being, whereas frustration of these activities typically has negative



consequences (Vignoles, 2011). However, the type of identity work that adolescents seemed to participate in on SM has been infrequently cited in the literature or studied as measurable well-being outcome with perhaps the exception of self-esteem (Dickson et al., 2018), though has been shown to motivate SM use and across cultures (Manzi et al., 2018).

### **Learning**

The theme of ‘learning’ captured adolescent SM use both in terms of supporting and obstructing learning. It was referenced across eight of the papers. Learning is an established marker of well-being, particularly in youth (Ozan, Mierina & Koroleva, 2018). Adolescents across five of the papers described ways in which SM provided access to information that allowed them to explore subjects and spark interest in new ones. Equally, adolescents also described how SM appeared to dominate discussions in school and intrude into learning environments, providing examples of how grades have suffered as a result of SM overuse. Such examples appear to relate to the concept of an ‘attention economy’ within a school, whereby SM, with its fast flow of eye-catching and distracting information, competes for attention in traditional educational settings, where deeper styles of attention are required for complex problems (see Crogan & Kinsley, 2012). Such disruptions to learning bear out in the theoretical literature, lending support to the ‘displacement hypothesis’ (Liu et al., 2016; Suchert et al., 2015), which suggests that time on SM replaces other, health enhancing-behaviours.

The tensions between SM and learning have been observed by others, who have pointed out the value and opportunities in harnessing the capabilities of SM to support education. Gikas and Grant (2013), for example, have reviewed how students can utilise technology such as SM within classroom settings, such as by augmenting communication and collaboration.

### **Emotions**

Adolescents in eighteen studies described several different examples of how SM impacted upon their current emotional states or ‘hedonic’ well-being. This type of moment-to-

moment emotional appraisal, (along with a cognitive appraisal of life satisfaction), combines to what is commonly measured as ‘subjective well-being’, where higher levels of pleasant affect (e.g. contentment) lead to greater well-being, and negative affect (e.g. envy) works in the opposite direction (Diener, 2000).

In a recent review of the extant literature, Verduyn et al. (2017) reported negative relationships between passive SM use and subjective well-being, and positive relationships (albeit weaker) between active use and well-being. The mechanisms proposed to underly these findings are somewhat commensurate with the current review. For example, Shaw, Timpano, Tran and Joormann (2015) showed that in a non-clinical sample of 17-24-year olds, passive Facebook use was associated with greater levels of social anxiety, a relationship moderated by ‘brooding’ (anxiously ruminating) behaviour. The current review provides some context to these findings, describing how SM can create a surveillance-like culture, in which adolescents worry about missing out on social news or events, or more pertinently, becoming the subject of such topics (similar to ‘brooding’).

Additionally, sources of pressure and worry were identified as coming from the perceived need to connect and respond to others with immediacy, suggesting more active patterns of engagement, though not necessarily driven by pleasure, more a pressure to conform and reply. For example, some considered it ‘impolite’ to not respond (Weinstein, 2018) or felt they ‘have to reply’ (Throuvala et al., 2019) suggesting a discourse of SM etiquette in which socially accepted judgements about expectations and transgressions may drive adolescents to certain unhelpful communication patterns, impacting on worry, distress and sleep. These discourses have been noted by others, having been described as ‘socially-created rules’ and ‘a perceived code of conduct’ (Course-Choi, 2019b).

### **Clinical implications**

In terms of leveraging the benefits of ‘connections’, parents and those concerned about SM may draw solace from recognising the benefits that some adolescents identified in SM use, such as providing support, coping with stressors and protecting from distress. Adolescents in this review appeared to benefit from positive online relationships with family and friends and finding groups of likeminded individuals to connect with. However, learning to negotiate experiences of feeling unwanted, un-liked and rejected- experiences also identified by adolescents in this review, is a complex emotional challenge. Coping strategies can vary, though some adolescents have described how sharing tricky experiences with family, friends and helping professionals can contribute to feelings of relief and belonging (Landau et al., 2019).

Clinicians may benefit from identifying the ways in which SM can represent a platform to explore and grow aspects identity, though but also from appreciating how it is also a place where self-esteem can be diminished. SM platforms can allow adolescents to disclose parts of the self to a wider audience, which has been associated with attaining validation and relief (Bazarova & Choi, 2014). Conceptually, the role of the audience in identity construction connects to that of ‘multi-voiced identities’; the idea that identity exists in the words and minds of many, instead of a single-voiced phenomenon (White, 2000).

Those working in learning environments may benefit from nuanced approaches that do not seek to completely eradicate forms of SM and mobile technology from classrooms. Gikas and Grant (2013) have suggested ways in which technology can be integrated into educational settings for older adolescents, such as institutional support and training.

In terms of helping adolescents manage aspects of hedonic well-being, stakeholders may benefit from thinking with young people about some of the dominant discourses relevant to SM use, particularly those that appeared related to certain types of pressure and worry

(Bouvier, 2015). To support this, Meehan and Guilfoyle (2015) proposed a narrative model of psychological formulation, which might be useful for exploring and deconstructing problematic discourses. Likewise, similar critical thinking activities about SM norms have also been proposed for classroom settings (Szablewicz, 2019). Alternatively, behavioural change interventions that could help adolescents' self-manage problematic SM use (e.g. at bedtime) have been suggested which aim to reduce the impact of compulsive use linked to a form of worry, similar to that identified in this review, such as 'fear of missing out' (FOMO; Weisner; 2017).

### **Research implications**

Overall, given the paucity of qualitative studies on this topic and the rapidly changing SM environment, the review welcomes further qualitative studies that bring valuable insights to the dynamic social and psychological processes inherent in adolescent SM use. In terms of increasing the depth of future knowledge, future research may benefit from utilising such approaches to generate theory and from exploring alternative methods of data collection. For example, researchers may wish to explore in-vivo data collection techniques, exploring the impacts of SM in real-time rather than reflections at a later date, which can be influenced by reporting bias. Other studies may benefit from exploring SM use across specific age groups, especially given the number and rapidity of developmental changes that occur between the ages of 10-19, something not undertaken in the research identified by this review.

Regarding the issue of accessing adolescent perceptions of well-being, research may benefit from contextualising their design and questions in a way that allowed adolescents to discuss facets of well-being in a way that would 'make sense' to them, thus increasing validity, and navigating potential issues regarding understanding and taboo. To further support ethical practice in this emerging field, all studies would benefit from adhering to ethical guidelines

when working with underage participants, such as the NSPCC's guidance on ethics, safety and avoiding harm when conducting research with children (Barnard, Drey, & Bryson, 2012).

Overall, the topic would likely benefit from quantitative studies that can explore and test the issues raised by adolescents in this review over larger population groups, across cultures and ages. These studies may wish to move towards process models, allowing researchers to tease apart the relative influence of potential factors. Longitudinal or experimental designs could also allow a degree of temporal order or causality to be established. In terms of relevant variables that may moderate or mediate the relationships, researchers may wish to understand how the more subtle experiences of SM rejection and their impacts on well-being that adolescents described in this review are borne out in larger data sets. More so, the connection that some adolescents made between self-esteem, well-being and type of feedback they received from friends would be beneficial to explore in larger data sets in both general and clinical populations.

### Conclusion

Despite a surge in interest regarding the relationship between SM use and well-being, relatively few studies have attempted to capture the views and experiences of adolescents, which is vital to understanding any proposed relationships. The current review sought to redress this balance by reviewing and synthesising the related qualitative literature. Nineteen studies were identified in which young people discussed their views and experiences of SM and well-being.

A thematic metasynthesis revealed four themes relating to well-being; connections, identity, learning and emotions. Within each theme, adolescents described the social and psychological drivers that appeared to relevant to their well-being, in both positive and negative terms. These findings demonstrated the numerous sources of pressures and concerns that adolescents experienced, which appeared related to active SM use and hedonic well-being. Striking too, were the ways in which adolescents seemed motivated to use SM related to aspects of eudaemonic well-being, such as to construct aspects of their identity, to learn, and build social connections. There is a lack of research that has investigated a range of eudaemonic well-being outcomes relating to SM use.

Taken together, the views and experiences of adolescents suggest that well-being and SM are related by a multifaceted interplay of factors including, thoughts, emotions, behaviours, and external narratives that influence aspects of use. Future research may wish to explore some these factors in quantitative research, to observe how they hold in general populations and explore them in relation to SM use and well-being outcomes.

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## **Section B: Empirical Paper**

Adolescent Social Media Use and Well-Being: A Longitudinal Analysis of Stress,  
Gender and Friendship Contingent Self-Esteem

Word Count: 7,996 (3)

A thesis submitted in partial fulfilment of the requirements of Canterbury Christ  
Church University for the degree of Doctor of Clinical Psychology and prepared for  
submission to the journal “Computers in Human Behaviour”

September 2020

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### **Abstract**

Social media has rapidly risen to occupy a pivotal role within many adolescents' lives, though often proposed to have detrimental well-being outcomes for its users. Despite a proliferation of research on this topic in recent years, findings have been inconsistent, hampered by methodological shortcomings and lacking in explanatory power.

The current study examined the cross-sectional and longitudinal relationships between social media and well-being in a sample of 497 adolescents from the UK (67.7% female; 16-19 years). Several hypotheses were tested relating to social media investment and friendship contingent self-esteem, and the influence of stressful social media events on well-being. The moderating roles of two vulnerability factors (gender and friendship contingent self-esteem) were tested within a diathesis-stress model.

In line with expectations, friendship contingent self-esteem was found to be significantly related to investment. A significant relationship between stress and well-being was also found, demonstrated in cross-sectional and longitudinal data. Counter to expectations, neither friendship contingent self-esteem nor gender were found to significantly moderate the influence of stressful events on well-being in a diathesis-stress model. The study highlights the significant role of two key variables linked to adolescent social media use and well-being. Implications for future research and practice are provided.

*Keywords:* Social media; well-being, adolescents, friendship contingent self-esteem, gender, longitudinal, mental health, stress

## **Introduction**

### **Social media- an emerging topic**

Social media can be defined as ‘forms of electronic communication through which users create online communities to share information, ideas, personal messages, and other content’ (Merriam-Webster, 2020). It emerged at the beginning of the 21st century and quickly became integrated into the daily lives of people, particularly those of adolescents in the west. (Palfrey & Gasser, 2008). Adolescents, defined as individuals between the ages of 10-19 (WHO, 2006) can be considered social media’s most committed users, with 96% of 16 to 24-year-olds using platforms such as Facebook (ONS, 2017). For these ‘digital natives’, social media has become the predominant way to experience relationships (Prensky, 2001).

The rapid rise of social media has taken place against a backdrop of growing concern about a decline in young people’s well-being in several western countries (Gunnell, Kidger & Elvidge, 2018; Haidt & Twenge, 2019). The topic has attracted much attention from parents, policymakers and researchers alike (Dickson et al., 2018). Despite a growing body of research, literature about psychosocial outcomes from social media use have been variable and not without controversy. More is needed to be known about facets of social media use and the individual characteristics of its users, via more sophisticated methods (Kim, 2017).

### **Social media and well-being- what do we know?**

Psychosocial outcomes, in particular ‘well-being’, has been a common thread in much social media research (Dickson et al., 2018). The term ‘well-being’, is often used to signify happiness or life satisfaction (hedonic well-being), though can also include a ‘eudaimonic’ component, which captures constructs such as personal meaning and self-realisation (Ryan & Deci, 2001). Positive adolescent well-being associated with several highly beneficial



secondary outcomes including social confidence, academic achievement, enhanced health and lower reported mental health difficulties (Huppert, 2009; Kern, Benson, & Steinberg, 2016; Lyubomirsky, King, & Diener, 2005) making it a key health and policy initiative.

Notwithstanding evidence regarding the potential well-being benefits associated with some social media use (e.g. Collin, Rahilly, Richardson & Third, 2011), a growing body of research has documented associations between its use to a range of adverse well-being outcomes, in particular, ‘screen-time’ - the amount of time spent using digital devices. Findings often show significant positive associations between usage and increased levels of depression and suicide rates, often found to be more pronounced amongst female users (e.g. Steers, Wickham & Acitelli, 2014; Twenge, Joiner, Rogers and Martin, 2018). Although policymakers have speculated about the causal links between the time spent using social media and well-being (e.g. Hunt, 2018), relatively little is still understood about this relationship from literature characterised by limited causational interpretations from cross-sectional data with a lack of theoretical underpinnings (Heffer, Good, Daly, MacDonell, & Willoughby, 2019; Orben & Przybylski, 2019; Erfani, & Abedin, 2018). In response, some have suggested future research should move beyond a focus on screen-time as a predictor in social media and well-being (Coyne, Rogers, Zurcher, Stockdale & Booth, 2020).

### **Social media- emerging research areas**

#### **Investment in social media**

Away from ‘screen-time’, researchers have explored the investment in the relationship that some users have with social media, differentiating from frequency of use to the degree to which an adolescent is invested in their social media platforms (Blomfield Neira, & Barber, 2014). In this sense, ‘investment’ use could be considered a measure of importance and emotional connection. Studies have shown investment as positively correlated with low mood,

worry and lower self-esteem in adolescent users (Dumitrache, Mitrofan, & Petrov, 2012; Blomfield et al., 2014). To build on these findings, it would likely be useful to explore factors that predispose some to greater levels of emotional investment in social media.

### **Stressful events**

An avenue of interest that researchers have turned to is the way social media can induce stress amongst its users (Apaolaza, Hartmann, D'Souza, & Gilsanz, 2019). This has developmental relevance, as during adolescence the adolescent brain is particularly sensitive to the effects of stress (Fuhrmann, Knoll & Blakemore, 2015). Accordingly, adolescents have been found to experience a multitude of stressful social media events in various forms of negative peer interactions (Beyens, Frison, & Eggermont, 2016; Pabian et al., 2018; van der Schuur; Baumgartner & Sumter, 2019).

Stressful events have been extensively linked with adverse well-being outcomes, including negative thoughts and hopelessness (Hughes, Gourley, Madson, & Le Blanc, 2011), alienation and withdrawal (e.g., Nelson & Simmons, 2003), and strong negative emotions (e.g., Parker & Ragsdale, 2015). Stress has also been shown to act indirectly within psychological models of well-being (Branson, Palmer, Dry & Turnbull, 2019). Research regarding the impact of stressful social media events on well-being is still its infancy, so developing an in-depth understanding of the specific aspects of social media use could impact upon its user's well-being would advance understanding.

### **Models of stress and well-being**

To further advance understanding in the area, it has been recommended that research move beyond simple paradigms, and towards more complex theoretical models that incorporate an understanding of how individual vulnerabilities interact with social media use to impact well-being (Kim, 2017). A relevant theory linking stress with well-being is the cognitive diathesis-stress model (Coyne & Downey, 1991). The theory proposes that personal

vulnerabilities can moderate the effect that experiencing stressful events can have on well-being. Several likely ‘vulnerabilities’ have been identified within the social media literature, including poor sleep and body image (Kelly, Zilanawala, Booker & Sacker, 2018). Recently, self-esteem has emerged as a latent construct linking social media use and well-being.

### **Self-esteem**

Self-esteem, defined as a subjective value judgment about one’s self (Baldwin & Sinclair, 1996), holds particular importance for adolescents in the current social media age. Self-esteem has been conceptualised as an integral component of prominent identity theories and salient to adolescent development (Erikson, 1968). A growing body of research has tracked self-esteem as both a measurable well-being outcome related to subjective well-being (e.g., Gonzales 2014; Vogel, Rose, Roberts, & Eckles, 2014) and influencing the relationship between social media use and distress (Chen & Lee, 2013).

Adolescence is a stage of development when the need for social acceptance is most intensified, and when self-esteem is often observed to precipitously fall (Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002), as the drive to be accepted amongst peers can impact self-evaluation in a way that it does not for children or adults (O’Brien & Bierman, 1988; Sebastian et al., 2010). It is fitting that social media platforms, inherent with public forums for quantifiable peer feedback, provide ample opportunities for adolescents to access self-evaluative information (Frison & Eggermont, 2017). These opportunities have recently been categorized into a framework containing three discrete processes: social comparison (comparing between the self and others), social feedback processing (receiving signs of social acceptance or rejection), and self-reflective processes (reflecting on self-provided information) (Krause, Baum, Baumann & Krasnova, 2019). Reviewing the literature within this framework, Krause et al., (2019) suggest that when social media sites are used for peer networking to compare oneself with others, it mostly results in decreases in users’ self-esteem. Conversely,

receiving positive social feedback or using platforms to reflect on one's self is often associated with self-esteem gains. The results are caveated, however, with the authors suggesting that the overall outcome of social media networking use on self-esteem appeared to depend more on inter-individual differences. One individual difference that appeared particularly salient to social comparison is contingent self-esteem. Contingent self-esteem is defined as a sense of self-worth that is heavily reliant on external factors and lies outside of one's immediate control (Stapleton, Luiz & Chatwin, 2017). A similar role for this variable was supported in a network analysis of negative influences of Facebook use (Faelens, Hoorelbeke, Fried, De Raedt, & Koster, 2019).

The importance of global self-esteem as a construct common to both social media use and adolescent development is striking. What is less clear, however, is how self-esteem that is contingent on external factors works within well-being models within the social media context.

### **Contingent Self-Esteem**

Theorists have argued that the importance of self-esteem's relation to well-being lies not only in whether overall it is high or low but, in the extent, and type of its pursuance. This has been termed 'contingent self-esteem' (Kernis, 2003, 2005). Self-evaluative information relevant to self-esteem contingencies is believed to be derived as a function of particular domains, rather than globally (Schwinger, Schöne & Otterpohl, 2017). As such, various measures of 'contingent self-esteem', an explicit self-esteem measure, aim to capture the level that individuals derive worth and value from specific domains, such as academic performance. Various measures of contingent self-esteem have been associated several well-being outcomes including with reduced global self-esteem, well-being and low mood (Crocker, 2002; Park & Crocker, 2008; Kernis, Lakey, & Heppner, 2008; Schöne, Tandler, & Stiensmeier-Pelster, 2015).

Of the many relational domains observed in which people stake their self-worth, 'friendship contingent self-esteem', described as the extent to which one base self-worth on the

quality of friendships, can be considered especially relevant to adolescence and social media use (Cambron, Acitelli & Steinberg, 2010). Developmentally, the role of friendships emerges in the identity formation process during adolescence, allowing young people to define themselves in relation to peer groups membership and voice their identities with their close friends (Rubin, Bukowski, & Parker, 2006). Social media affords numerous opportunities for individuals who place a high value on their friendships to stay connected online (Alhabash & Ma 2017), meaning that it may be especially valued by individuals whose self-esteem is contingent on the quality of their friendships. Previously, a significant positive relationship has been found between young adults with high friendship contingent self-esteem and use of social media sites (Pettijohn et al., 2012). These findings have not been explored in a younger population, creating a lack of knowledge regarding the development of friendship contingent self-esteem among adolescents and its relationship to well-being.

### **The role of friendship contingent self-esteem within stress models**

As with other forms of contingent self-esteem, friendship contingent self-esteem can be considered an individual vulnerability factor, as it has been found to operate as a key interpersonal variable within the development of depression in a sample of US adolescents (Cambron, Acitelli & Steinberg, 2010). Previously, friendship contingent self-esteem has been linked to unhelpful interpersonal behaviours such as negative feedback-seeking, rumination and excessive reassurance-seeking (Cambron & Acitelli, 2010). Social media users who are highly invested in their platforms may likely engage in behaviours such as eagerly seeking peer feedback and intensified social comparison (Manago, Graham, Greenfield, & Salimkhan, 2008). What is less clear, is how friendship contingent self-esteem operates within stress models to impact well-being.

In line with the stress-diathesis model, adolescents with high friendship contingent self-esteem are likely to be more vulnerable to reductions in well-being than those with low

friendship contingent self-esteem, after experiencing adverse events congruent with friendship quality. To date, only two longitudinal studies have investigated a diathesis-stress model of contingent self-esteem as a vulnerability to emotional well-being (using measures of depressive symptoms) in adolescents. Both studies showed that adolescents whose self-esteem is dependent on social acceptance (Burwell and Shirk, 2006) or academic competence (Schöne, Tandler, & Stiensmeier-Pelster, 2015) were more vulnerable to lower moods in the context of stressful events. Amongst cross-sectional data, support for a diathesis-stress model of contingent self-esteem has been found, with further research needed to clarify the role of friendship contingent self-esteem as a moderating factor in the diathesis-stress model between stress and well-being, particularly within the developmental period of adolescence (Cambron, Acitelli & Steinberg, 2010).

### **Gender**

Gender differences have often been highlighted in the social media well-being literature (e.g. Kelly et al., 2018). These results are aligned with general findings from the stress and well-being literature (e.g. Newland et al., 2014). Females are often found to experience a higher proportion of stressors and lower mood than males (Rose & Rudolph, 2006; Rudolph & Hammen, 1999), and several theoretical accounts have been put forward to make sense of these often-observed differences, including peer socialization theories (Almeida & Kessler, 1998) and evolutionary explanations (Taylor et al., 2000).

The influence of gender has also been theoretically linked to interpersonal self-esteem contingencies to explain gender differences in the development of low mood in adolescence (Cambron, Acitelli, & Pettit, 2009). It is hypothesised that females are at greater chance of experiencing distress by a self-esteem contingent on interpersonal domains than males, as females have been shown to engage more often in patterns of behaviour linked to sadness and worry such as ruminating over negative interpersonal events (Mezulis, Abramson, & Hyde,

2002). It is likely, therefore, that gender, particularly during the adolescence stage, may represent a further moderating component in the relationship between social media use and well-being using the diathesis-stress model (Cambron et al., 2009).

### **The current study**

The current study seeks to advance understanding of the relationship between social media use and well-being within an adolescent population. Specifically, it aims to consider the impact of experiencing stressful events on social media and well-being. It also aims to understand how friendship contingent self-esteem may represent a personal vulnerability factor in relation to investment in social media use. Building on previous correlational work, the study seeks to investigate the separate and concurrent roles of friendship contingent self-esteem and gender, in terms of their moderating impact on well-being in the presence of stressful events on social media within the diathesis-stress model. Building on the limitation of previous research designs, the current study further aims to partially address the issue of causation by providing an idea of the temporal order of certain variables using a longitudinal design. Specifically, it is predicted that:

**Hypothesis 1.** There will be a significant relationship between experiencing stressful social media-related events and lower well-being.

**Hypothesis 2.** In longitudinal data over two timepoints, the number of stressful social media events will predict the extent to which participants' well-being decreases between time 1 and time 2.

**Hypothesis 3.** That investment in social media use (i.e. how important and how emotionally connected a user is to their online social media accounts) will be significantly predicted by friendship contingent self-esteem amongst adolescents.

**Hypothesis 4.** Friendship contingent self-esteem will moderate the relationship between experiencing stressful social media-related events and well-being, such that for people with higher friendship contingent self-esteem, there will be a higher association between stressful events and well-being.

**Hypothesis 5.** Gender will moderate the relationship between experiencing stressful social media-related events and lower well-being such that there will be a higher association for female participants than for male participants.

**Hypothesis 6.** The moderating effects of gender on the relationship between experiencing stressful social media-related events and well-being will be mediated by friendship contingent self-esteem.

**Hypothesis 7.** The moderating/mediating hypotheses 4, 5 and 6 will hold in longitudinal data, between two time points, two-weeks apart. Friendship contingent self-esteem and gender will moderate the relationship between stressful events experienced at time 1 and change in well-being at time 2.

The conceptual models illustrating the proposed relationships are shown in Figure 4. Should support for these hypotheses be found, findings could help build an evidence base to support previous literature. Furthermore, it could also represent a useful step in helping to identify young people who may be at risk of adverse psychological outcomes related to using social media, leading to better targeted preventative and supportive interventions.

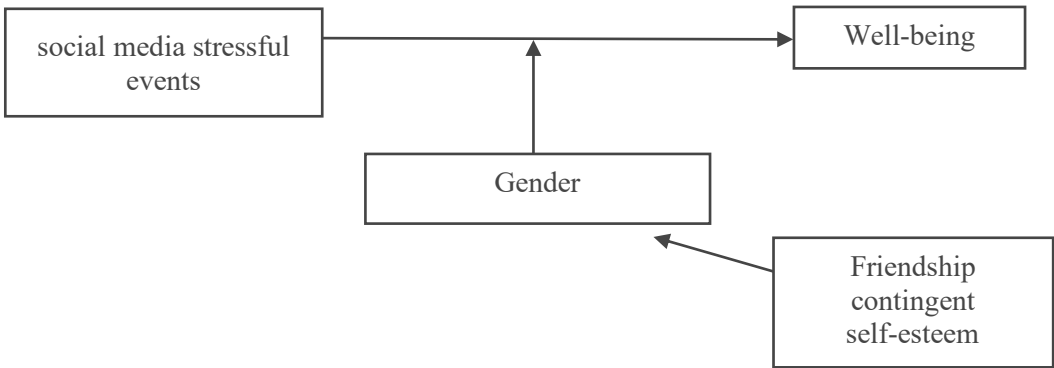
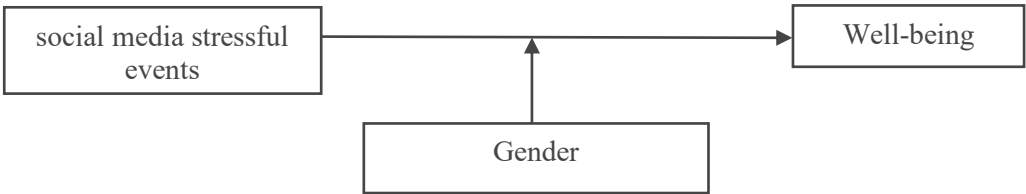
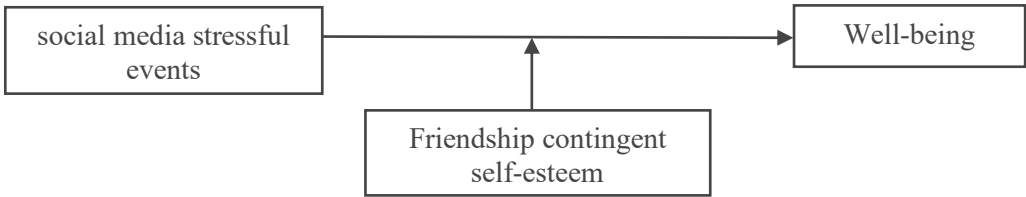


**Figure 4** Overall conceptual diagrams for the hypothesized relationships between the social media stressful events and well-being, statistically moderated by gender and friendship contingent self-esteem.

Hypothesis 1. Total effects



Hypothesis 4, 5 and 6. Direct and indirect effects



## Method

### Design

This study used a non-experimental, survey design, with cross-sectional and longitudinal elements. The relationship between investment in social media use, stressful social media events and well-being was investigated. The moderating variables gender and friendship contingent self-esteem were added to examine their influence on the relationship under investigation. A second wave of data were collected (two weeks later) creating a longitudinal research design, measuring the variables of experiencing stressful social media-related events and well-being.

### Participants

Participants were recruited from two UK secondary schools, one in England and one in Wales, and from a general population sample of adolescents who responded to a targeted advert placed on the social media platforms Facebook, Facebook Messenger and Instagram which covered the entire UK geographically.

The final sample comprised 497 adolescents (342 females, 145 males, and ten who chose not to select binary options or did not provide gender information), drawn from a general population of social media users aged between 16 and 19 years. The mean age of participants was 16.88 years ( $SD = 0.88$ ). At follow-up, 47.3% of participants dropped out, leaving 271 adolescent participants (198 females, 67 males and six other), with a mean age of 16.86 years ( $SD = 0.89$ ). Participants were predominantly White British (88%). Over 90% of participants had an educational level higher than GCSEs (A\*-C or equivalent). Participants were not compensated for participating though were entered into a prize draw to win a retail gift voucher. Table 5 contains descriptive statistics about demographic information.

**Table 5** *Descriptive Statistics for the Sample recorded at time 1 and time 2*

	Time 1		Time 2	
<i>Baseline characteristic</i>	N	%	N	%
Total	497	100	271	100
<i>Gender</i>				
Male	145	30	67	24.7
Female	342	67.7	198	73.1
Other	9	2.1	6	2.2
Missing	1	0.2	0	0
<i>Age</i>				
16 years	182	36.8	107	39.5
17 years	216	43.8	113	41.7
18 years	52	10.1	29	10.7
19 years	38	7.6	20	7.4
Missing	9	1.8	2	0.7
<i>Ethnicity</i>				
White British	438	87.5	238	87.8
Other/mixed heritage	34	7.5	19	7
Chinese	7	1.4	6	2.2
Indian	4	0.8	1	0.4
Pakistani	4	0.8	2	0.7
African	4	0.8	3	1.1
Irish	3	0.6	1	0.4
Caribbean	2	0.4	1	0.4
Bangladeshi	1	0.2	0	0
<i>Highest Education Achievement</i>				
Higher education	27	5.3	16	5.9
A Level or equivalent	138	28.4	69	25.5
GCSEs (A*-C or equivalent)	281	56.4	161	59.4
Other qualifications	14	2.7	5	1.8
No qualification	31	6	19	7
Don't know	5	1	1	0.4
Missing	1	0.2	0	0

### Statistical power

A priori power analysis using G\*Power (Faul, Erdfelder, Lang & Buchner, 2007) recommended that 100-150 participants would need to be included to detect a medium effect size based on regression analysis and t-tests. A sensitivity test suggested that 150 participants would allow analysis to detect effect sizes as small as .10.

## **Materials**

The materials used consisted of a web-based survey package, which included a demographic questionnaire (capturing age, gender, ethnicity, highest level of education attained, email address) and four self-report scales.

### **Investment in Social media Use**

The Facebook Intensity Scale (Ellison, Steinfield, and Lampe, 2007) was initially developed to examine university students' social media usage and social capital and measures Facebook use beyond simple measures of frequency and duration. The measure was adapted in this study to measure social media investment through substituting in the phrase 'social media' for 'Facebook' in the stem question. The six items were measured on a 1-5 Likert-type scale (1 = strongly disagree, 5= strongly agree) and included items such as "I feel out of touch when I haven't logged onto social media for a while". The questionnaire was administered to participants at time point 1.

A large number of studies have consistently shown that the scale to be reliable (i.e., Cronbach's  $\alpha > .70$ ), including instances where it has been adapted to be made relevant to more general social media use (Salehan & Negahban, 2013) or other social media platforms (e.g. Snapchat; Piwek & Joinson, 2016). The scale was observed to have adequate internal consistency in this study ( $\alpha = 0.75$ ). The item "I would be sorry if social media shut down" was removed, as it was deemed somewhat illogical after adapting the wording; this improved internal consistency ( $\alpha = 0.80$ ). The scale has not yet been systematically validated. Despite this shortcoming, the scale's psychometric properties may be inferred to some extent from the many substantive studies that have used this common measure (Sigerson & Cheng, 2018).

### **Friendship contingent self-esteem**

The Friendship Contingent Self-esteem scale (Cambron, Acitelli, & Steinberg, 2010) is an eight-question scale on a five-point Likert scale anchored by ‘very little like me’ and ‘very much like me’. It measures friendship contingent self-esteem by explicitly asking respondents questions such as “I can’t feel good about myself if I feel rejected by my friends” and “when my friends and I fight, I feel bad about myself in general”. The scale has good construct validity, high internal consistency as measured by the alpha coefficient, and good convergent and discriminant validity ( $\alpha = .87$  in Cambron, et al., 2010). The scale was observed to have adequate internal consistency in this study ( $\alpha = 0.91$ ) and was administered to participants at time point 1.

### **Stressful social media-related events**

The Adolescent Minor Stress Inventory (AMSI) is a measure developed to assess minor stress among adolescents over a two-week period (Ames et al., 2005). The ‘minor stressors’ in this scale represent everyday events which can be a salient source of emotional upheaval for some people (Modecki, Zimmer-Gembeck & Guerra, 2017). The relationship subscale was used and adapted to capture the frequency of stressful events related to social media use by adding to the root questions. The adapted version contained items such as “I argued with a friend *on social media*”. The ten items were measured on a 1-5 Likert-type scale (1 = none of the time, 5= all of the time), and are averaged to create a mean stress score ranging from 1 to 5, where higher scores represented more stress.

The AMSI has shown good reliability and validity, as demonstrated in the original paper and in subsequent studies (Rosenfield, Jouriles, Mueller & McDonald, 2013). The scale was observed to have adequate internal consistency in this study ( $\alpha = 0.91$ ) and was administered at time point 1 and 2.

### **Well-being**

The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) is a 14-item self-report measure designed to capture different aspects of eudaimonic (happiness) and hedonic (meaning and self-realisation) well-being. It is worded positively and produces a total well-being score ranging from a minimum of 14 to a maximum of 70, with higher scores representing higher levels of well-being. It has good reliability and validity (Tennant et al., 2007) and can be completed by young people aged 13 years and above. Although intended as a population measure, it has been shown to be responsive to change at the group and individual level in a wide variety of settings including community settings and schools (Maheswaran, Weich, Powell & Stewart-Brown, 2012). The scale was observed to have adequate internal consistency in this study ( $\alpha = 0.94$ ) and was administered at both time points.

### **Procedure**

Participants who were recruited as detailed above received a hyperlink to the online survey by instant message. The participants were presented with an information page describing the study, followed by a separate consent page. Participants then completed demographic questions and the self-report scales as described. Participants were contacted again after 14 days via email and sent a personalised link to the repeated measures of the AMSI and WEMWBS. Following the completion of the survey, participants were provided with an online debrief and an opportunity to contact the researcher and research team if required.

### **Ethical issues**

Approval was granted by the Canterbury Christ Church University, Salomons Institute for Applied Psychology, ethics committee. Specific attention to risks of psychological harm was considered during the construction of the online survey, as given the age of the participants, asking adolescents to reflect over stressful online encounters and their well-being can be

considered potentially emotionally distressing. Accordingly, the study protocol was informed by Berman (2016), by explicitly asking participants to consider issues relating to upsetting experiences prior to agreeing to participate in the survey. Potential participants were recommended not to participate if they believed that answering questions on this topic would cause distress. Once the survey had begun, participants were informed that they were able to pause and resume the survey at a later time point should they wish to and also that they could discontinue at any point should they wish too. Following the completion of the study, participants were provided with contact information of relevant organisations that can offer support with any issues that may have been raised by completing the surveys.

### **Analytic strategy**

Initial data checks were performed for missing data using Little's MCAR, checking of test assumptions including normality and distribution and internal consistency of scales using Cronbach's Alpha. A primary analysis of the data was then conducted.

Hypothesis 1-3 were tested using linear regression analysis. Hypothesis 4-7 were tested using the PROCESS macro for SPSS (Hayes, 2017). PROCESS is a bootstrapping procedure that generates a representation of the sampling distribution of the indirect effect through repeatedly re-sampling the original sample with a substitute, generating a new distribution that represents an empirical approximation of the indirect effect in the original population. PROCESS was employed in place of the traditional causal steps approach (Baron and Kenny 1986), as it formally tests the significance of indirect pathways rather than logically inferring the existence of a moderator (Hayes 2009). All analyses were performed with SPSS software (24). Each analysis will be described in more detail at the appropriate point in the results section.

## Results

### Preliminary analysis

A preliminary screening of the data test showed few data missing for each instrument at time 1 (between 0-3% for each instrument). Participant attrition at time 2 was observed to be 46%. Missing data analysis suggested data were missing at random, so primary analyses used listwise deletion (i.e. individual data sets were deleted if they were missing data). For the measure of well-being (WEMWBS), following recommendations from the scale user guide (Stewart-Brown & Janmohamed, 2008) participants who had fewer than three missing values ( $N = 3$ ) had their total scores calculated by taking the mean value of responses to items that they had answered, and using that mean score as the score for those questions which they did not answer.

Before conducting the main analyses, all variables were intercorrelated, and means and standard deviations investigated (Table 6). Investment in social media use was positively correlated with friendship contingent self-esteem and not shown to be significantly correlated with other outcomes. Friendship contingent self-esteem was also positively correlated with stress and negatively correlated with well-being. Stress and well-being were negatively correlated at both time points. Participants had, on average, 613 friends across all social media platforms ( $SD = 707$ ) and spent an average of four hours per day on social media ( $SD = 3.34$ ).

Table 7 shows that the well-being mean for females was 38, and for males, 45 using the WEMWBS. Using the best available comparative data, in the UK 2016, females aged 16-24 had a WEMWBS score of 48 and males, 50 (Morris, Earl & Neave, 2017). To examine gender differences within the sample, an independent-samples t-test showed that females exhibited significantly lower scores on well-being compared to males at time 1 and similarly at time 2. No significant differences were found on measures of friendship contingent self-esteem between female and male participants.



**Table 6** Means, standard deviations, and intercorrelations among the variables ISMU, FCSE, AMSI & WEMWBS using Pearson's *R*.

Scale	M	SD	ISMU	FCSE	AMSI T1	AMSI T2	WEMWBS T1	WEMWBS T2
ISMU	3.80	0.71	-	0.22**	0.11	0.11	-0.04	-0.07
FCSE	3.33	0.98	-	-	0.33**	0.18**	-0.32**	-0.24**
AMSI-R T1	2.13	0.83	-	-	-	0.69**	-0.37**	-0.38**
AMSI-R T2	2.05	0.74	-	-	-	-	-0.40**	-0.41**
WEMWBS T1	40.34	11.36	-	-	-	-	-	0.79**
WEMWBS T2	39.24	10.75	-	-	-	-	-	-

\*\*Correlation is significant at  $p < .001$

ISMU = Investment in social media use

FCSE = Friendship contingent self-esteem

AMSI T1= Social Media Stress (Time 1, 2)

WEMWBS – Warwick-Edinburgh Mental Wellbeing Scale (Time 1, 2)

**Table 7** Independent *t*-tests for gender differences among the variables for social media investment, FCSE, stress and well-being (times 1 & 2)

Variables	Males		Females		Mdifference	<i>t</i> (df)
	Valid <i>n</i>	<i>M</i> (SD)	Valid <i>n</i>	<i>M</i> (SD)		
Investment in social media use	142	3.75 (0.73)	328	3.83 (0.67)	-0.08	0.12 (0.11)
Friendship Contingent Self-esteem	142	3.21 (1.07)	328	3.38 (-0.94)	-0.17	-1.59 (0.16)
Social Media Stress Time 1	142	2.09 (0.85)	328	2.14 (0.81)	-0.05	-0.66 (0.07)
Social Media Stress Time 2	65	1.97 (0.70)	194	2.08 (0.77)	-0.11	-1.05 (0.15)
Well-being Time 1	142	44.84 (12.24)	328	38.42 (10.52)	6.42	5.77** (0.56)
Well-being Time 2	65	44.14 (12.41)	194	37.59 (9.54)	6.54	4.41** (0.59)

\*\*Difference is significant at  $p < .001$

### Statistical analysis

To investigate **hypothesis 1**, that a significant relationship between experiencing stressful social media related events and lower well-being exists, a simple linear regression was carried out to investigate whether stressful social media events (AMSI time 1) predicted well-being (WEMWBS time 1). As shown in Table 8, the regression model accounted for a significant proportion of the variance in the data ( $R^2 = 0.14$ ,  $F(1, 477) = 76.463$ ,  $p < .001$ ). The slope coefficient for stress was -5.15, indicating that well-being decreases by 5.15 points for each additional level of social media stress reported. The  $R^2$  value indicated that 14% of the variation in well-being can be explained by the model containing only stress at time 1 on average. This relationship is shown in Figure 6 (Appendix 5).

**Table 8** Regression summary for stressful social media events predicting well-being at time 1.

Source	<i>B</i>	<i>SE B</i> 95% Confidence Interval	$\beta$	<i>t</i>	<i>p</i>
Constant	51.22	1.34 (48.59, 53.85)		38.24	0.001
Stressful Social Media Events (Time 1)	-5.15	0.59 (-6.31, -3.99)	-0.37	-8.74	0.001

*B* = the unstandardized beta

*SE B* = the standard error for the unstandardized beta

$\beta$  = the standardized beta

*t* = the *t*-test statistic

*p* = the probability value

$R^2$  = the proportion of variance in the dependent variable predicted from the independent variable

MSE = the standard error of the estimate

*F* = the mean square regression divided by the mean square residual

To investigate the longitudinal **hypothesis 2**, that the number of stressful social media events between time 1 and 2 will predict the extent to which participants' well-being decreases in a two-week period, well-being change between time 1 and 2 was first calculated using standardised residual scores. A simple linear regression, shown in Table 9, demonstrated that

stressful events predicted well-being change. The model accounted for a significant proportion of the variance in the data ( $R^2 = 0.03$ ,  $F(1, 263) = 6.76$ ,  $p < .01$ ). Approximately 3% of the variation in well-being change can be explained by the model containing only stressful social media events between time 1 and 2. This relationship is visually represented in Figure 7 (Appendix 5).

**Table 9** *Regression summary for stressful social media events 2 predicting well-being change between time 1 and time 2.*

Source	<i>B</i>	<i>SE B</i> 95% Confidence Interval	$\beta$	<i>t</i>	<i>p</i>
Constant	0.422	0.178 (0.071, 0.773)		2.369	0.01
Stressful Social Media Events (Time 2)	-0.212	0.82 (-0.373, -0.051)	-0.158	-2.591	0.01

**Hypothesis 3** predicted that investment in social media use will be significantly predicted by friendship contingent self-esteem amongst adolescents. As can be seen in Table 10, a simple linear regression showed that friendship contingent self-esteem predicted investment in social media use,  $R^2 = 0.05$ ,  $F(1, 494) = 24.88$ ,  $p < .001$ . The slope coefficient for friendship contingent self-esteem was 0.159, so on average, investment in social media increased by 0.159 for each additional point of friendship contingent self-esteem. Approximately 5% of the variation in investment in social media use can be explained by the model containing only friendship contingent self-esteem. This relationship is visually represented in Figure 8 (Appendix).

**Table 10** Regression results summary for *fCSE* predicting investment in social media use.

Source	<i>B</i>	<i>SE B</i> 95% Confidence Interval	$\beta$	<i>t</i>	<i>p</i>
Constant	3.27	0.11 (48.59, 53.85)		29.614	0.001
Friendship Contingent Self-esteem	0.16	0.032 (-6.31, -3.99)	0.22	4.98	0.001

**Hypothesis 4** predicted that friendship contingent self-esteem will moderate the relationship between experiencing stressful social media-related events and well-being, such that for people with higher friendship contingent self-esteem, there will be a higher association between stressful events and well-being. A simple moderation analysis was conducted using PROCESS (model 1). As shown in Table 11, evidence showed that friendship contingent self-esteem statistically moderated the relationship between stressful social media events and well-being at the interaction  $b = 1.2$ ,  $t(475) = 1.99$ ,  $p < .05$ .

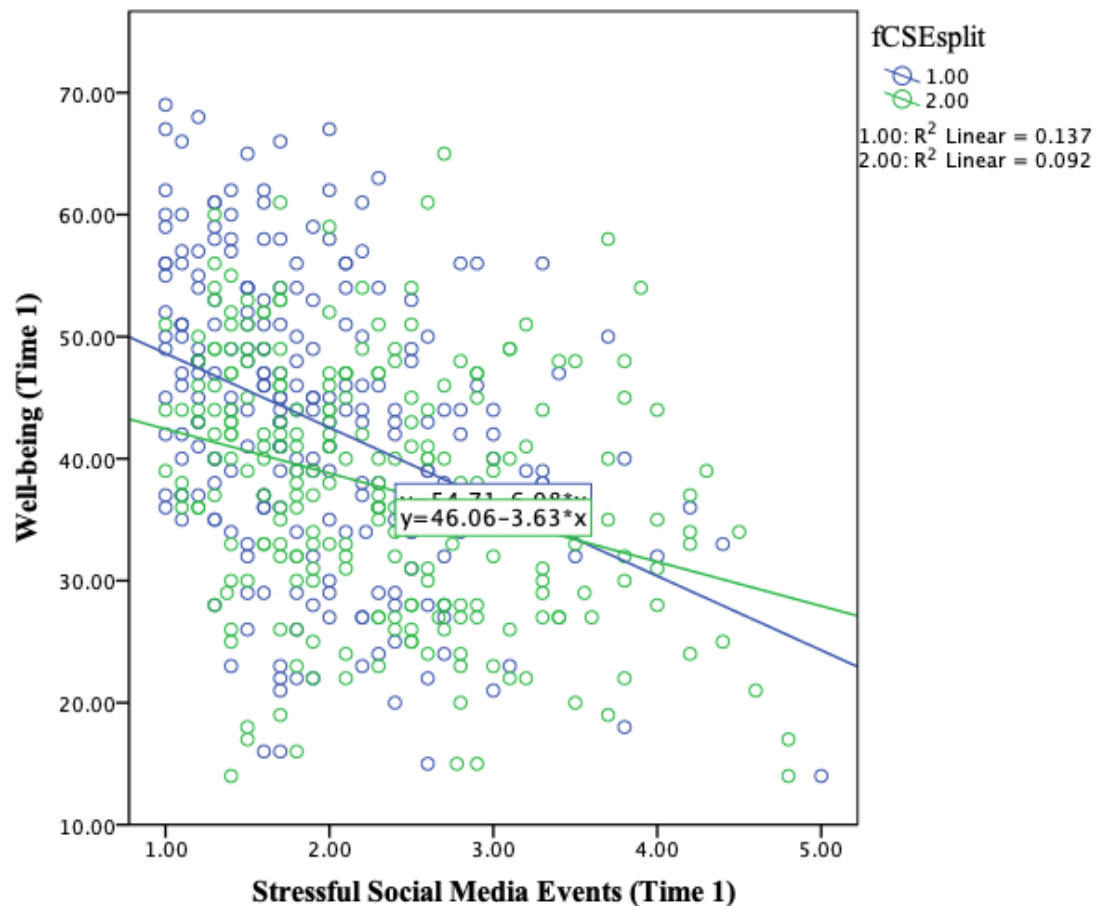
**Table 11** Conditional process analysis results for the relationship between stress and well-being statistically moderated by friendship contingent self-esteem.

Source		<i>B</i>	<i>SE B</i> 95% Confidence Interval	<i>t</i>	<i>p</i>
Model 1: Original Data $R^2 = 0.19$ , MSE = 105.41	Constant	$i_Y$ 66.104	4.5509 (57.16, 75.05)	14.526	<.001
	Stress (time 1) (X)	$b_1$ -8.469	2.2499 (12.89, -4.05)	-3.764	<.001
	Friendship contingent self-esteem (W)	$b_2$ -5.004	1.307 (-7.57, -2.44)	-3.829	<.001
	Stress * Friendship contingent self-esteem (XW)	$b_3$ 1.207	0.607 (0.02, 2.40)	1.99	<.05

After mean-centering both variables, a simple slopes analysis was carried out to investigate the observed moderation further. A regression equation was created in PROCESS for stressful events (predictor) and well-being (outcome) at low, high, and moderate levels of the friendship contingent self-esteem (the moderator), defined as 1 SD below the mean, at the mean, and 1 SD above the mean (shown in Figure 9, Appendix 5). The simple slopes analysis showed that the association between stressful events and well-being were significant at all three levels of the moderator. For low friendship contingent self-esteem, each increase in the level of stress produced a -5.62 reduction in well-being ( $b = -5.62$ ,  $t(475) = -5.90$ ,  $p = .001$ ). For average friendship contingent self-esteem, every increase in the level of stress produced a -4.44 reduction in well-being ( $b = -4.44$ ,  $t(475) = -7.15$ ,  $p = .001$ ). Finally, for high friendship contingent self-esteem, every increase in the level of stress produced a -3.25 reduction in well-being ( $b = -3.25$ ,  $t(475) = -4.3$ ,  $p = .001$ ).

To further examine the finding that lower levels of friendship contingent self-esteem experienced the strongest influences of stress on well-being, participants were split into two groups, low friendship contingent self-esteem (1) and high (2) based on a median split of friendship contingent self-esteem level. A simple linear regression showing the relationship of stressful events on well-being showed that the low friendship contingent self-esteem group demonstrated the steepest fall in well-being, and thus further supported the finding that participants with low friendship contingent self-esteem appeared to be driving the moderation effect. This finding is illustrated in Figure 5.

**Figure 5** Scatterplot depicting the relationship between well-being and stressful social media events at time 1 for participants low (1) and high (2) in friendship contingent self-esteem (fCSE).



**Hypothesis 5** predicted that gender will moderate the relationship between experiencing stressful social media-related events and lower well-being, such that there will be a higher association for female participants than in male participants. Given the low number of participants identifying as other or not indicating gender ( $N=10$ ) this data was removed from this analysis. A simple moderation analysis was conducted using PROCESS (model 1). As can be seen in Table 12, the confidence interval for this term contained zero, therefore there was no evidence that gender significantly statistically moderated the relationship between stressful social media events and well-being ( $R^2 = 0.2$ ,  $F(3, 475) = 39.82$ ,  $p = .001$ ,  $b = 1.9$ ,  $t(475) = 1.84$ ,  $p < .06$ ). As no moderating relationship was shown for gender, hypothesis 6 (mediation) was not tested.

**Table 12** *Conditional process analysis results for the relationship between stress and well-being statistically moderated by gender.*

Source			<i>B</i>	<i>SE B</i> 95% Confidence Interval	<i>t</i>	<i>p</i>
Model 1: Original Data $R^2 = 0.2$ , MSE = 104.01						
	Constant	$i_Y$	44.584	.857 (42.90, 46.27)	52.009	<.001
	Stressful events (time 1) (X)	$b_1$	-6.481	1.012 (-8.47, -4.49)	-6.406	<.001
	Gender (W)	$b_2$	-6.069	1.025 (-8.08, -4.05)	-5.919	<.001
	Stress*gender (XW)	$b_3$	1.932	1.228 (-0.48, 4.35)	1.84	<.06

To test **hypothesis 7**, that the moderating hypotheses 4 and 5 will hold in longitudinal data, two further simple moderation analysis was conducted using PROCESS to test the moderating roles of gender and friendship contingent self-esteem on the relationship between stressful events and well-being change at Time 2. As can be seen in Tables 13 and 14, there was no evidence that either friendship contingent self-esteem ( $b = -0.05$ ,  $t(261) = -0.52$ ,  $p = .6$ ), or gender ( $b = -0.05$ ,  $t(261) = -0.1$ ,  $p = .61$ ) significantly statistically moderated the effects of experiencing stressful social media events on well-being.

**Table 13** *Conditional process analysis results for the longitudinal relationship between stress and well-being change statistically moderated by friendship contingent self-esteem.*

Source			<i>B</i>	<i>SE B</i> 95% Confidence Interval	<i>t</i>	<i>p</i>
Model 1: Original Data $R^2 = 0.03$ , MSE = 0.985						
	Constant	$i_Y$	-0.07	0.633 (-1.31, 1.18)	-0.10	<.92
	Stressful events (time 2) (X)	$b_1$	-0.07	0.314 (-0.69, 0.55)	-0.22	<.83
	Friendship contingent self-esteem (W)	$b_2$	0.15	0.181 (-0.21, 0.51)	0.83	<.41
	Stress*Friendship contingent self-esteem (XW)	$b_3$	-0.05	0.087 (-0.22, 0.13)	-0.52	<.60

**Table 14** *Conditional process analysis results for the longitudinal relationship between stress and well-being change statistically moderated by gender.*

			<i>B</i>	<i>SE B</i> 95% Confidence Interval	<i>t</i>	<i>p</i>
Source						
Model 1: Original Data $R^2 = 0.04$ , MSE = 0.94	Constant	$i_Y$	0.482	0.362 (-0.23, 1.195)	1.331	<.184
	Stressful events (time 2) (X)	$b_1$	-0.125	0.174 (-0.467, 0.216)	-0.722	<.471
	Gender (W)	$b_2$	-0.084	0.415 (-0.901, 0.734)	-0.201	<.841
	Stress*gender (XW)	$b_3$	-0.101	0.196 ( -0.48, 0.29)	-0.514	<.608



## Discussion

The results are next discussed in terms of findings and limitations, and their relationship to extant literature and theory.

### **Stress, social media and well-being**

Hypothesis 1 predicted that there will be a significant relationship between experiencing stressful social media-related events and lower well-being. A linear regression showed that at time 1, the number of stressful media events experienced accounted for a significant proportion of the variance in the well-being data. An average of 14% of the variation in well-being was explained by this model. A similar pattern of results was also shown to hold in longitudinal data, as tested by hypotheses 2, which predicted that the number of stressful social media events will predict the extent to which participants' well-being decreases between time 1 and time 2. This model accounted for 3% of the variation in well-being change.

The findings from hypotheses 1 and 2 do not provide evidence of causality. They do, however, suggest the temporal order of these variables, with stressful events preceding well-being in the relationship, as shown in the longitudinal data. This supports previous research findings investigating the relationship between adolescents' social media use and well-being; findings that have shown an association between social media use and poor mental health outcomes (e.g. Liu, Wu, & Yao, 2016; Twenge, Martin & Campbell, 2018; Kelly et al., 2018). The current study extends these previous findings, demonstrating that social media provides a context in which stressful events are experienced that, in turn, reduce adolescent users' well-being by a small, but statistically significant amount. Conversely, longitudinal research regarding the impact of social media on mental health has in the past produced inconsistent findings; recently, a longitudinal study with a similar number of participants ( $N = 594$ ) found no association between social media use and depressive symptoms over two years (Heffer et al., 2019). The present study does not necessarily contradict these findings; rather, it

emphasises the importance of other more salient variables (i.e. the impact of stressful events) in the purported relationship between social media use and well-being.

The results from the first two hypotheses also relate to theoretical models regarding stress and well-being, that suggest that repeated exposure to stress over time has detrimental effects on psychological and emotional well-being (Baum, Gatchel, & Schaeffer, 1983; Morales, & Guerra, 2006). In line with theoretical arguments, it was demonstrated that stressful events shared a small, but a significant negative relationship with adolescent well-being. In keeping with the broader stress and well-being literature, the current study also showed how stress experienced within certain social domains and well-being is associated (Kiang & Buchanan, 2014).

#### **Friendship contingent self-esteem as a vulnerability**

Hypothesis 3 predicted that investment in social media use will be significantly predicted by friendship contingent self-esteem in adolescents. A simple linear regression confirmed that higher reported friendship contingent self-esteem influenced investment in social media in the adolescent sample, with approximately 5% of the variation being accounted for by the model containing only friendship contingent self-esteem. Although the current findings do not imply directional causality, they support and extend similar findings from the extant literature, showing that friendship contingent self-esteem represents a vulnerability to well-being. Pettijohn et al., (2012) found that intensity of Facebook use was positively correlated with friendship contingent self-esteem in a sample of young adults; the current study extends these findings to a younger group of participants aged 16-19. Social media investment was also shown to be a significant positive predictor of low mood at a similar magnitude to the current study (4%), and a significant negative predictor of global self-esteem in a group of adolescents of a similar age (Blomfield et al., 2014). Taken together, the findings support related theory highlighting the relationship between social media intensity and friendship

contingent self-esteem as an interpersonal risk factor for low mood and maladaptive interpersonal behaviours, potentially including excessive reassurance-seeking and rumination (Cambron & Acitelli, 2010). More broadly, the findings also indicate support for the relational perspective of social media use and well-being, by highlighting the role that perceptions of friendship quality impact well-being (Taylor & Bazarova, 2018), thus providing support for previous findings that social media plays an indirect role on well-being through changes in perceptions of relational closeness and satisfaction (Tay & Diener, 2011; Valkenburg & Peter, 2009).

Hypothesis 4 explored the role of friendship contingent self-esteem as an interpersonal risk factor and predicted that friendship contingent self-esteem will moderate the relationship between experiencing stressful social media-related events and well-being, such that for people with higher friendship contingent self-esteem, there will be a higher association between stressful events and well-being. The results showed a significant interaction between friendship contingent self-esteem and stress. However, a subsequent analysis of the data suggested that, contrary to the expected relationships, participants with low friendship contingent self-esteem appeared to be driving the moderation effect. These results ran counter to findings from a related study (Cambron, Acitelli, & Steinberg, 2010), which showed that friendship contingent self-esteem acted as a diathesis to indications of low mood in a sample of 230 undergraduate students (mean age 21 years).

Several viable explanations may account for this unexpected result. One possibility concerns the outcome measure used (the WEMWBS); namely that it was not sufficiently sensitive to detect changes in cognition and affect related to friendship contingent self-esteem. Related studies have used alternative ways to capture fluctuations in well-being. Cambron, Acitelli, & Steinberg (2010) used global self-esteem and a further measure of rumination (taken to be an indicator of depressed mood). Research related to other contingencies of self-esteem

and well-being has relied on clinical measures of depression when examining young adults (e.g. Beck Depression Inventory-II, BDI; Beck, Steer, & Brown, 1996), or the Children's Depression Inventory (CDI; Kovacs, 1985) for adolescents. While these clinical measures may add additional clinical relevance, they were deemed in this study to pose an ethical risk for young people who were presumed to be completing the online survey unsupervised. The WEMWBS, with its positively worded statements, was judged to be more suitable in this risk context.

An alternative possibility is that the result produced a type I error, given that the interaction between friendship contingent self-esteem and stress was very close to zero. In this sense, despite the relatively large sample size, the result may be spurious. Further clarification may be gained from the replication of this study.

If, however, after replication this result was shown to hold, a possible explanation could be that people whose self-esteem may be less reliant on external validation may possess higher levels of intrinsic well-being, such that when they experience stressful relational experiences, their well-being is more greatly impacted.

### **Gender as a diathesis**

Hypothesis 5 introduced the variable of gender, predicting that there would be a higher association between experiencing stressful social media-related events and lower well-being for female participants than for males. Gender was not found to moderate the relationship between stressful events and well-being within a conditional model as the obtained confidence interval straddled zero (Hayes, 2015).

Although hypothesis 5 was tested amongst a relatively large sample size, the removal of ten participants from the analysis who did not indicate gender or did not identify as male or female may have biased the result. Despite this, although this result runs counter to the hypothesis, it is in keeping with a recent study that similarly examined the moderating role of gender in the relationship between stress and well-being (Branson et al., 2019). This finding is

inconsistent with literature that suggests that adolescent females are more sensitive to the impact of stress than males (e.g., Flook, 2011; Kiang & Buchanan, 2014) and findings that the negative impact of social media on well-being only holds for female users (Kelly et al., 2018).

Although gender was not found to moderate the relationship between relationship stress and well-being, meaningful clinical differences were present, showing that female participants reported a lower level average well-being score than males (Females = 38, Males = 45, as measured using the WEMWBS; Table 3). This is consistent with established trends for females on other mental health outcomes such as low mood (Nolen-Hoeksema, 2001) and other internalising problems more generally (Lupien, McEwen, Gunnar & Heim, 2009). This pattern of differences has been accounted for in the theoretical literature as occurring through a mix of biological factors and the psychosocial influence on female gender roles (Rose & Rudolph, 2006). Alternatively, the observed clinical differences in well-being reporting between genders may have occurred as a result of male participants underreporting signs of distress, a possibility commensurate with the finding that boys are less willing to report negative emotions (Vacek, Coyle & Vera, 2010).

### **Longitudinal process results**

Hypothesis 4 and 5 were tested in the longitudinal data. Results showed that gender and friendship contingent self-esteem did not statistically moderate the relationship between stressful events experienced at time 1 and change in well-being at time 2. It is likely that the same limitations hold in the longitudinal data. There are additional reasons that may account for these results. Firstly, there was a 46% attrition rate between times one and two, so the returning participants may have been biased in additional ways. A ‘third variable’ effect is also possible within longitudinal studies, so it is not possible to rule out the possibility that some unmeasured, extraneous variable was responsible for an association without random assignment of participants to conditions.

Despite these results being internally consistent with early study findings, the results are inconsistent with extant literature relating to the role of self-esteem contingencies, including Schöne et al., (2015) who showed that adolescents with self-esteem that is contingent on academic success were more at risk of experiencing low mood over time. The current results are also inconsistent with the theory that postulates that friendship contingent self-esteem and gender represent vulnerability factors within a longitudinal diathesis-stress model (Cambron, Acitelli & Pettit, 2009). In line with these theories, the current set of findings may suggest that adolescent females are not predisposed to patterns of behaviour that may indicate low mood, such as rumination (Mezulis et al., 2002). It is also a possibility that the importance of close friendships did not hold for social media as predicted, which is to speculate that social media does not operate at a relational depth sufficient enough to compromise friendship quality. It was noted that amongst the items on the measure of stressful experiences (AMSI), the item 'I did not look good enough on social media' presented as the most frequently highly scored factor amongst participants. This may suggest a different contingency, such as self-esteem contingent on appearance is more relevant to the adolescents' social media use (Crocker & Wolfe, 2001).

### **Clinical implications**

In this study, friendship contingent self-esteem was shown to be a significant predictor of investment in social media, though not directly of well-being. This has some clinical implications, as high levels of emotional investment in social media has previously been shown to be associated with lower well-being amongst adolescents (Blomfield et al., 2014). Contingent self-esteem has also previously been shown to have a unique interaction with low self-esteem in adolescents, leading to a range of detrimental mental health outcomes (Bos, Huijding, Muris, Vogel & Biesheuvel, 2010), strengthening the cause for clinicians to consider friendship contingent self-esteem when working alongside vulnerable adolescents.

The results also suggest that parents, clinicians and other stakeholders interested in helping young people access social media in a more leisurely and less invested way, could benefit from helping young people to develop a more secure sense of self-esteem. One possible route involves developing greater psychological flexibility, through developing the confidence and freedom to hold and explore both positive and negative aspects of the self which can be achieved through mindfulness practice. Heppner and Kernis (2011) suggest that mindfulness practices may help to develop such abilities and act as a buffer against the detrimental effects of fragile self-esteem through promoting authenticity.

The current project also serves to highlight the role of social media as a *context* in which distressing events can be experienced, which may detrimentally impact upon well-being. Adolescents experience their lives in complex and fast-changing digital environments, meaning that those working alongside this age group may be anticipated to be familiar with young people's digital habits, and in particular stressful relationship encounters, to help inform assessment, formulation, treatment plans and intervention. Familiarity with social media may also help develop the therapeutic relationship between therapist and adolescent client. In a related study, it was shown that adolescent perceptions of a therapist social media competency predicted the therapeutic alliance rating, regardless of how much or little an adolescent used social media (Pagnotta, Blumberg, Ponterotto & Alvord, 2018). Taken together, these findings support the need for clinicians practising in related fields to obtain an awareness of social media competency alongside other cultural competencies.

### **Limitations and implications for future research**

The present study has several limitations that are worth noting. Firstly, the sample was restricted to adolescents between the ages of 16-19 living in the United Kingdom, a high proportion of whom were white and female. It is conceivable that the nature of the variables and processes under investigation would be different for other groups, so caution is advisable

when generalising these findings. Gender was not found to operate as a moderator within the proposed stress model; as only 30% of participants were male, future studies may wish to replicate with a larger sample of adolescent males. Well-being was noted to be lower in this sample than recent averages for a similar population group. This may have influenced findings as social media users with lower well-being have been found to engage differently with certain aspects of social media (Reinecke & Trepte, 2014).

The study also employed only self-report measures using internet data capture. Other types of measures may demonstrate different effects. For instance, experience sampling (Csikszentmihalyi, Larson, & Prescott, 1977; Shiffman, Stone, & Hufford, 2008) via web-based mobile devices for real-time repeated capture of individuals may track more precisely the stressful social media experiences to elucidate the temporal nature of the associations. Though stressful events were shown to influence well-being in this study in both cross-sectional and longitudinal data, caution should be advised regarding overinterpreting causation from correlation relationships. It may be beneficial to repeat the longitudinal data capture at a third wave as well, extending understanding of how the variables under investigation vary over time or conduct experimental studies to strengthen the hypothesis.

In terms of alternative outcomes measures, capturing ‘rumination’ could represent a more valid indicator of psychological distress, as self-esteem instability can lead to feelings of uncertainty and experiencing interpersonal stressors has been shown to lead to short-lived decreases in self-esteem for individuals high in friendship contingent self-esteem (Cambron, Acitelli & Pettit, 2009). Finally, those interested in examining the present hypotheses or applying the findings should note that this study may produce a different set of results if carried out by other researchers, on an alternative sample group and with different measures. This consideration is important to note given the level of contradictory findings and disagreements between authors reported within the domains of adolescent well-being and social media.



### Conclusion

The current study showed that in a large sample of adolescents aged 16-19, friendship contingent self-esteem, a factor previously shown to be related to lower well-being outcomes, was significantly related to investment in social media use, also an indicator of poor mental health outcomes. These results were demonstrated in cross-sectional data, and although causation cannot be implied, do highlight potential groups that may be more vulnerable to having well-being compromised. However, contrary to expectations neither friendship contingent self-esteem nor gender were found to significantly moderate the influence of stressful events on well-being when examined using a process model of stress.

The study demonstrated a significant relationship between experiencing relationship stress on social media and well-being, showing that adolescents' well-being was significantly impacted through relational stress experienced online over a two-week period. Although the magnitude of the relationship was small, the effect was demonstrated both in the cross-sectional and longitudinal data, which provided an indication of the temporal order of these events.

Future studies may benefit from exploring how self-esteem based on alternative external contingencies (e.g. 'appearance') may operate within a stress-diathesis model for adolescents using social media, using alternative measures. Despite non-significant findings, some clinical implications may also be taken from the findings. As friendship contingent self-esteem had previously been identified as a risk factor for lower well-being in adolescents, the current study emphasises the importance of clinicians to consider this dimension of self-esteem working alongside vulnerable adolescent populations. More generally, the study also emphasised social media as a relevant context in which distressing events are experienced, suggesting the need for clinicians working with adolescents to increase their awareness and competence in social media.

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## **Section C: Appendices**

A thesis submitted in partial fulfilment of the requirements of Canterbury Christ  
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**Appendix 1** *Section A CASP qualitative study appraisal tool*

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**Appendix 2** *Section A papers assessed by CASP criteria*

Criteria	Example	Papers 1-5				
		<i>1. Baker &amp; White (2011)</i>	<i>2. Bell (2019)</i>	<i>3. Best et al. (2015)</i>	<i>4. Bharucha (2018)</i>	<i>5. Burnette et al. (2017)</i>
Aims	Explicitly stated aims/objectives of research	Yes  To understand the reasons why teenagers do not use social networking sites, their concerns regarding SM use.	Yes  To understand how SM may function within adolescents' personal and social development; why adolescents create, share and respond to images on social media.	Yes  To investigate the relationship between online friend networks and the well-being (MWB) of adolescent males.	Yes  Paper aims to explore whether and to what extent social media comes in the way of well-being, contributes to addictive behaviour and other harmful social effects.	Yes  To examine the nature and extent of an early adolescent female engagement with SM and their perceptions of its impact on body image.
Methods	Appropriate use of qualitative methods	Yes  The first time this question posed in the literature, so appropriate to use explorative methods.	Yes  Research explicitly asks 'how and why' questions.	Yes  Mixed methods study. The aim of the qualitative component was to 'shed some light on the relational nature of MWB' under investigation in quantitative component.	Yes  Qualitative methodology chosen to provide an account of the experience individuals have and explore important events	Yes  Limited qualitative data supporting research in this area.
Research design	Justification of the specific research design- has the researcher justified the research design.	No  It was unclear what methodology used in this study as it is not described, only referenced; justification is not given for this 'conceptual qualitative analysis'.	No  Detailed description of thematic analysis is provided, but no justification is given.	Partially  Partly discussed rationale for thematic analysis.	Partially  There is discussion of the theoretical basis of the study, however no mention of proposed method of analysis or rationale.	Yes  The authors state that thematic analysis was used as project is not driven by theory nor theory generating.
Sampling	Appropriate sampling strategy, description of recruitment, discussion of recruitment.	Partially  A limited description of the sampling strategy was provided; rationale and discussion were absent from the study.	Yes  Description of sample strategy and purpose of capturing adolescents with normative 'social media use'. Saturation of data not discussed, so unclear whether more information required.	No  Recruitment for part 1 discussed in-depth, however potential biases of those opting to take part/not in focus groups not discussed.	Partially Recruitment is described however, there is no discussion of potential biases possibly inherent within the sample.	Yes  Sample compared to a co-educational school; rationale given as a useful comparison.
Data collection	Appropriate description of data collection methods in a way that addressed research question.	Partially  The report described a limited approach to data collection (one collection). It appears no further data was collected, remains unclear if this would have been necessary from the description.	Partially  Focus group justification given (mirrors 'the co-creative nature of such practices in the real world').	Partially  Similar to the quantitative part of the research, there is little discussion around data collection in part 2.	Partially A basic description of the data collection is given; however, it is not clear how the sample links theoretically, the concept of addiction discussed in the introduction.	Yes  An evident description of data collection is provided.

Reflexivity	Critical examination of researchers' own role and bias in data collection and analysis.	No  The relationship between researcher and participants was not mentioned or considered, nor the research teams possible biases.	No  This was not discussed.	No  There is no statement of position provided, also the potential bias of part 1 influencing neutrality of analysis in part 2 not acknowledged.	No  No mention of reflexivity, particularly troubling as the paper is written inconsistently in the first person and shows signs of strong biases throughout.	Yes  Researchers' position and bias is described, as are procedures put in place to manage the impact of this and limitations to findings.
Ethical Issues	Evidence of approval by an appropriate body, details of how the research was explained to participants, discussion of issues raised.	Partially  Appears to have been limited contact between participants and researchers, as the process was managed through the school. No mention of debriefing or follow up.	Yes  It is not clear if participants were debriefed or followed-up. Potential ethical issues as participants were visiting recruitment site (university) as prospective candidates.	No  Describes that ethical approval was given, a discussion of group interviewing as less stressful than one-to-one, however nothing in relation to disclosure or debrief.	No  There is no mention of ethics throughout the paper.	Partially  Paper describes that approval was given, an opt-out procedure was used, all but one participant accented. No debrief or mention of follow up. Potentially important considering the emotional nature of the conversations.
Data analysis	Adequate description of analysis process, sufficiently rigorous data analysis.	Partially  The process is well described though lacking in detail. This is perhaps a result of limited data set to work with.	Partially  Themes are presented with supporting quotes. Saturation not discussed, neither contradictory findings which may detract from validity. Researchers own role not considered- important given recruitment and design.	No  It is not clear how themes were constructed or how well supported as few quotes. The report uses much pre-existing theory in analysis.	No  There is no description of the analytical method used or how themes were derived. Seems to be deductive based on pre-existing theoretical frameworks regarding addiction.	Yes  The thematic map describes how the themes were developed. It could have been helpful to see more participants quotes.
Findings	Clear statement of the findings, discussion of evidence, credibility, integrity evidence both for and against.	Yes  Limitations are discussed, an acknowledgement that this is a first explorative study.	Partially  Discussion of the findings in relation to the original question and current literature. Credibility is not critically appraised, especially limitations regarding biases and data collection.	No  Findings are presented; however, they are not critically appraised.	No  There is no clear statement of findings presented; results are not critically appraised.	Yes  Clearly stated. Adequate discussion of limitations as well as findings
Value of Research	Contribution to existing knowledge and transferability.	No  It is left unclear how this research has contributed to the literature.	Yes  The research generated a number of stimulating findings and multiple recommendations for further research.	Partially  Value of unique findings highlighted. No ideas for future research are presented other than reaffirming existing calls for longitudinal studies.	Partially  The researchers compare findings to their existing hypothesis. One of the few papers that provides insight into SM use outside of European/USA context.	Yes  The authors discuss the implications for intervention rather than future research opportunities.

Criteria	Example	Papers 6-10				
		6. Calancie et al. (2017)	7. Chua & Chang (2016)	8. Davis (2012)	9. Duvenage et al. (2020)	10. Jong & Drummond (2016)
Aims	Explicitly stated aims/objectives of research	Yes  To investigate the narratives surrounding how negative aspects of Facebook, specifically the mechanisms through which it can contribute to anxiety, impact adolescent users with a primary anxiety disorder diagnosis.	Yes  To uncover the underlying meanings accounting for the interplay of self-presentation and peer comparison on SM.	Yes  How does online peer communication about self-disclosure of personal feelings on SM shape adolescents 'experience of a sense of belonging and self-disclosure (identity).	Yes  To describe adolescents' identified motivations and experiences of engaging with their online environments in order to manage their emotions and stress.	Yes  A number of aims are provided, though do not seem particularly specific- e.g. 'to understand the effect of immediacy' and development of identity
Methods	Appropriate use of qualitative methods	Yes  Aims to investigate young people's narratives.	Yes  Paper aims to uncover the meanings embedded in teenage girls' use of selfies.	Yes  Qualitative methods are justified as can be problematic to explore identity processes using quantitative methodologies.	Partially The authors describe using a mixed-methods approach to validate the experience of the participants.	Yes The authors provide a rationale for including the adolescent voice in SM research.
Research design	Justification of the specific research design- has the researcher justified the research design.	Yes Aim of generating 'in-depth understanding of the unique experiences' provided as a rationale for an interpretive, inductive analysis process.	Partially Although the design seems appropriate to answer the research questions, neither the design or the rationale is explicitly discussed in the paper.	No The author does not provide a rationale for why the type of thematic analysis or broader methodology was chosen.	Partially Thematic analysis is named, though the justification for this approach is not provided.	Partially The authors discuss and justify the use of social constructionism as a theoretical frame, though it could provide more specific details of how this specifically related to their design and choice of method of analysis.
Sampling	Appropriate sampling strategy, description of recruitment, discussion of recruitment.	Yes  Adequate discussion of sampling procedure and methodology	Yes Sampling strategy described and discussed in terms of meeting the aims of the study question.	Yes Sampling strategy is well described, an adequate description of recruitment of participants given and limitation of the sample are discussed.	Partially  A description of the limited sampling procedure is given, justified as a pilot study.	Yes Recruitment is appropriately described and discussed by the authors.
Data collection	Appropriate description of data collection methods in a way that addressed research question.	Yes  A clear description of the focus group protocol was provided.	Partially  The authors could have provided more detail regarding the interview method chosen and how the interviews were conducted.	Partially  As data in this study was taken from a more extensive study, the researcher describes which questions were asked that addressed the aim of the current project.	Partially  The interview procedure is detailed in the paper, which appears to relate to the broader research question.	Yes A clear description of the focus group procedure is documented by the authors and their suitability for capturing the type of data required.

Reflexivity	Critical examination of researchers' own role and bias in data collection and analysis.	Yes The authors provide a clearly labelled statement of reflexivity.	No There is no statement of reflexivity provided by the researchers.	No There is no statement of reflexivity provided by the researchers.	No There is no statement of reflexivity provided by the researchers.	No There is no statement of reflexivity provided by the researchers.
Ethical Issues	Evidence of approval by an appropriate body, details of how the research was explained to participants, discussion of issues raised.	Partially The authors discuss that some people did not feel comfortable to take part and opted out. However, does not address issues of follow up or participant care after focus group.	Partially The study was approved by an appropriate body; parental consent was sought. There is not mention of debrief or follow-up of participants.	Partially The researcher describes certain practices put in place that consider participant 'comfort', however ethical approval is not discussed, neither is debriefing.	Partially The study was approved by a university ethics committee. There is no further mention of participant safety or care, despite young people being asked to talk around stressful events and coping.	Yes Ethical approval is discussed, as are some steps to ensure participants were adequately supported throughout data collection.
Data analysis	Adequate description of analysis process, sufficiently rigorous data analysis.	Partially A detailed description of the main themes are provided, but not clear how these they were derived.	Yes A brief, though robust description of the analysis process is provided by the authors.	Partially Results are presented in a narrative format; it is not clear how themes were derived and how well supported they are.	No A generic description of thematic analysis is given, however the exact way that the research team followed for generating themes is not clear.	Partially Themes are presented cogently, supported by participant quotes. It is not clear how well each theme is supported by each participant.
Findings	Clear statement of the findings, discussion of evidence, credibility, integrity evidence both for and against.	Yes Results are discussed in terms of limitations of comparing to a general population, also in terms of small sample size.	Yes Finding are discussed in detail and themes are well supported by participants quotes. Lack of mention of contradictory findings may indicate lack of critical appraisal.	Partially Findings are clearly stated; however, they are not discussed in relation to broader theory, using comparison to isolated findings. Findings are not critically appraised.	Yes A clear statement of findings is provided. Qualitative results are also discussed in light of the quantitative findings presented in the second part of the paper, further extending the initial findings. Limitations are mentioned	Yes The authors briefly state their findings, then relate to previous literature and theory. Findings are described in depth and limitations discussed.
Value of Research	Contribution to existing knowledge and transferability.	Yes Paper is unique in that it describes the impact of SM on the emotional well-being of adolescents with anxiety disorders. Provides a number of useful clinical recommendations that go beyond that of mental health services.	Yes The findings are clearly related to pre-existing theories. Implications for school interventions are suggested supporting adolescent well-being in light of the findings.	Partially The research points toward interesting findings and encourages more research. Given the year that this was conducted, this paper was notably ahead of its time in terms of the methodology applied to the area.	Yes The study contributes a novel set of findings using mixed methods. Recommendations are made.	Partially The research provides an in-depth description of psychological processes that are proposed to underly it's user's well-being. A number of practical recommendations are made for education professionals.

Criteria	Example	Papers 11-12				
		<i>11. MacIsaac (2018)</i>	<i>12. O'Reilly (2020)</i>	<i>13. O'Reilly et al. (2018)</i>	<i>14. Radovic et al. (2017)</i>	<i>15. Scott et al. (2019)</i>
Aims	Explicitly stated aims/objectives of research	Yes  To investigate young people's use of online social spaces within a school context.	Yes  The aims of the project are clearly stated, the question 'What do adolescents (and mental health practitioners) think of social media in relation to mental health?' is posed.	Yes  To investigate how SM is viewed in terms of mental wellbeing by adolescents, find how they think of social media and its relevance to mental health and emotional well-being.	Yes  To find the main purposes for using SM, examples of times adolescents felt SM use was positive/negative, whether the negative experiences with SM adversely affected mood, how SM use may be related to low mood.	Yes  To provide a deeper insider understanding of what drives adolescents' social media engagement at bedtime, how this may influence bedtime social media habits and experiences that negatively impact on sleep.
Methods	Appropriate use of qualitative methods	Yes  Qualitative methods were selected as they provide a way to get behind the actions of online social space use.	Yes  The use of qualitative methods is stated and justified because of the value of direct participant views and experiences.	Yes  Clearly stated and discussed- used to facilitate the exploratory character of the study and build on the limited data relating to adolescent perspectives.	Yes  To understand the mechanisms behind how emotional states may be linked with SM use and vice versa requires more thorough investigation than a cross-sectional survey.	Yes  The qualitative approach aimed to give adolescents 'a voice' often underrepresented, but which has the potential to inform research, policy and practice; to find what drives adolescent behaviour.
Research design	Justification of the specific research design- has the researcher justified the research design.	No The researchers do not justify their methodology, though state that it is part of a larger project. No description or justification of 'Bourdieuian influenced theoretical framework' was used.	Yes  The use of thematic analysis is described and justified as being able to best capture the relationship between social media and mental health.	Yes  Authors describe a 'macroconstructionist perspective' because it promotes a broader and interpretive layer to analysis; considered appropriate by others for exploring young people's experiences and views. Thematic analysis was utilised due to its data-driven focus and meaning-making direction	No  The authors have not provided any justification of the specific research design adopted in this study.	No  Thematic analysis is mentioned and described; it's use in this study is not justified.
Sampling	Appropriate sampling strategy, description of recruitment, discussion of recruitment.	Yes The 'organic process of purposive and volunteer sampling' is described, however, would be useful to have a discussion of implications of young people who chose not taking part and why.	Yes A description of the sampling strategy is provided; there is a discussion around ensuring demographic diversity.	Yes  Participants were recruited from schools in two UK cities reflecting a broad diversity of socioeconomic and ethnic backgrounds	Yes  Convenience sampling strategy; potential participants were informed about the study by clinicians at two sites. No discussion of potential biases in the sample, e.g. why some participants did not want to participate.	Yes The sample does meet the requirements for 'general' population, thus negating the need for specialist knowledge. No discussion around people who did not opt to take part, potential bias.



Data collection	Appropriate description of data collection methods in a way that addressed research question.	Partially The authors discuss the use of participant observation as the method used; more information could be added to regarding collection, though this may be detailed in the companion paper alluded to.	Yes  A limited account of data collection methods is provided, which included the use of focus groups and how data was captured. It would have been useful to know where the focus groups were conducted (assumed to be schools) and a sample of the interview schedule.	Yes  Focus groups were conducted as useful sensitive topics and younger participants. Question schedule for the focus groups was kept relatively broad so that it could be participant-driven and child-centred. Sampling adequacy was assured through the process of data saturation.	Yes  An adequate description of the methods used for data collection is provided by the authors. Data were audiotaped and transcribed verbatim. There is no discussion or justification of potential limitations they may have arisen by the method chose.	Yes  A description and some discussion of the data collection process is provided. There is some justification for the use of age stratification. Data were digitally audio recorded.
Reflexivity	Critical examination of researchers' own role and bias in data collection and analysis.	No  There is no statement of reflexivity provided by the researchers.	Partially The author states her position on the topic during the 'aims' section; however, it is left to the reader to decide how her perspective may have influenced the subsequent analysis.	No There is no statement of reflexivity; it would have been useful for the researchers to have engaged in this issue, especially given the use of sociological theory used to explain the results (e.g. moral panic theory)	No  There is no statement of reflexivity provided by the researchers.	No  There is no explicit reference to the authors own role and bias in data collection. There is some discussion of discussing ideas with colleagues, though this related more to the construction of themes.
Ethical Issues	Evidence of approval by an appropriate body, details of how the research was explained to participants, discussion of issues raised.	Yes  The study was approved, and authors provide a detailed account of the ethical guidelines and adhered too, and principles followed.	Partially It is stated that ethical approval was granted, and that age-appropriate material was designed. There is not a discussion of debriefing around topics that can be sensitive in nature (i.e. mental health)	Yes  Research Ethics Committee provided ethical approval for the study. Age-appropriate information sheets, written consent taken from them. Written parental consent was also acquired. Nothing on the nature of the topics discussed.	Partially  It is not clear from this study whether ethical approval was gained, though it is mentioned that it is part of a larger study. In the limitation's sections, the authors mention adaptations to create a confidential and comfortable environment.	Yes  The authors state that ethical approval was granted. It is also one of the few papers that acknowledges follow up support for the participants (e.g. signposting to support services).
Data analysis	Adequate description of analysis process, sufficiently rigorous data analysis.	Yes  A robust description of the process of data analysis is provided by the authors relating to this extensive project.	Yes  The author provides a description of the analysis process, is clear on how concepts were formed, and the procedures put in place to manage contradictory findings and disagreements. There is a lack of discussion regarding reflexivity.	Yes  The process is described as three members of the team engaged in 3 levels of the coding process and coding frames produced were mapped to create a final version. This multiple reading and engagement with the data ensured intercoder reliability. In total, 122 second-order codes were identified. Authors role or contradictory findings are not discussed.	Yes  The authors provide an adequate description of the methods of data analysis used, and how themes were constructed, use of data saturation. Good use of quotes to support themes. The researcher's role/position on the topic or contradictory findings is not critically appraised.	Yes  A thorough discussion of the process of analysis is provided by the researcher. However, as previously discussed, the researchers own role is not critically appraised.

Findings	Clear statement of the findings, discussion of evidence, credibility, integrity evidence both for and against.	Yes The authors provide a compressive set of findings as themes, interwoven and supported by direct observation, participant quotes and interpretations. It is unique too compared to the other articles used in this review.	Partially Themes are clearly organised into 'good, bad and the ugly'. It is not clear how the latter to differ within the text, and this difference is not sufficiently explored within the discussion. There is no clear statement of findings at the outset of the discussion.	Partially The results are discussed in support of the authors' theory that 'moral panic' may account for the relationship between SM and well-being. This explanation is not critically appraised in light of the research limitations (e.g. some adolescents did not understand key terms) and the lack of author reflexivity, thus presenting a potentially uneven discussion.	Yes There is a rich and detailed discussion of the findings, though the key findings relating to the impact of SM on well-being are set a few paragraphs into the main discussion. Limitations are highlighted; findings are discussed in light of comparable research.	Yes Findings are clearly presented and discussed in light of relevant theory and other findings. Themes are made up of the voices of adolescents who experience positive and/or negative impacts of SM, thus demonstrating integrity and nuanced argument.
Value of Research	Contribution to existing knowledge and transferability.	Yes The study highlights the way SM can shape the social contexts that adolescents exist in, providing practical examples and relating to key psychological concepts such as identity and well-being.	Partially This is one of a number of papers that approached the topic from a sociological perspective, e.g. analysing findings from a 'moral panic' theoretical framework. This is an interesting perspective, though it leads to a perhaps a limited, one-dimensional analysis of data.	Partially Paper provides a counterpoint to some other 'psychiatric' papers on the topic. Findings give way to some broad suggestions which may be problematic to implement, no suggestions for further research.	Yes The authors discuss the transferability of the findings to general populations. Some broad clinical implications are provided though no recommendations are made for further research.	Yes By focussing on a particular aspect, the researchers seem to elicit significant accounts of information regarding the relationship under investigation. Ideas for intervention and future research directions (e.g. what individual differences explain these variations) are proposed.

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Criteria	Example	Papers 16-19			
		<i>16. Singleton et al. (2016)</i>	<i>17. Throuvala et al. (2019)</i>	<i>18. Vermeulen et al. (2018)</i>	<i>19. Weinstein (2018)</i>
Aims	Explicitly stated aims/objectives of research	Yes  Two questions are asked in relation to the aim: ‘what are adolescent’s perceptions of how SM use interacts with well-being and distress?’ and ‘how do young people use SM for self-disclosure and self-presentation in relation to their emotional experiences?’	Yes  The aim is stated as ‘to investigate the uses, motivations, and values that are ascribed to screen time and SM use among adolescents.’	Yes  The aim is stated as ‘understanding adolescents’ perspectives and to learn which communication modes they use to share specific emotions and especially why they share in that way.’	Yes  The overarching aim of this two-part study is ‘How do daily interactions with social apps influence adolescents’ affective well-being?’
Methods	Appropriate use of qualitative methods	Yes  The authors state that they used qualitative methods because they were interested in participant perceptions.	Yes  It is stated that a qualitative study was conducted to explore adolescent students’ views and attitudes on SM, reflect on personal experiences, and understand the processes underlying and driving use.	Partially The research is exploratory in nature, thus lends itself to qualitative framework; this is not explicitly stated.	Yes This is a mixed-methods paper. Qualitative methods were used in the second phase to ‘identify functional dimensions of social media use implicated in adolescents’ narrative descriptions of positive and negative SMP experiences.
Research design	Justification of the specific research design- has the researcher justified the research design.	Yes  The authors provide some discussion about the use of a ‘constructivist grounded theory-informed approach’ in order to elicit views of the person’s subjective world.	Yes  The method is stated as Thematic Analysis and is described in detail. A rationale is provided as based on previous similar studies. It would be helpful to see the specific reasons why within this study.	No  There is no justification provided for the specific use of thematic analysis.	No  There is some discussion of why qualitative methods were chosen, but no justification of the specific design.
Sampling	Appropriate sampling strategy, description of recruitment, discussion of recruitment.	Yes  The sampling strategy seems appropriate for the study, and there is a description of the recruitment procedure. There is no discussion of those that chose not to participate or why recruitment was from only one site.	Yes  The report describes why adolescents were chosen as participants and the methods employed in order to ensure some representation within the sample.	Yes  There is a brief discussion of the recruitment process and how the researchers achieved a representative sample that met their needs.	Yes  A detailed description of the sampling strategy is provided, including how participants were tracked across ‘affect dimensions’ to ensure representation.
Data collection	Appropriate description of data collection methods in a way that addressed the research question.	Yes The methods are described, and there is a thoughtful discussion of the consultation process used to prepare the interview schedule.	Yes Similar to previous comments, the procedure is described in great detail though there is little rationale for why a particular approach was adopted within this study. Form of data collection is clear.	Yes The authors provide a robust account of their method of data collection. This is one of the more novel approaches to data collection, and so the detailed description and justification are welcomed.	Yes The interview process is described in relation to the project aims. The methods are detailed, and extra information relating to justification is provided.

Reflexivity	Critical examination of researchers' own role and bias in data collection and analysis.	Yes These two sections are clearly delineated in the paper- the authors used independent personal to check potential biases at different stages in the process. There is a reflexive statement that centres the authors' interests and ideas about the topic.	Partially There is no statement of reflexivity, though there is an acknowledgement of procedures to ensure rigour and trustworthiness of interpretations.	Partially There is no explicit statement of reflexivity, though some measures to address potential bias are discussed in the data analysis section.	No There is no statement of reflexivity or explicit examination of the researchers' own role in the project.
Ethical Issues	Evidence of approval by an appropriate body, details of how the research was explained to participants, discussion of issues raised.	Yes The authors briefly describe obtaining ethical approval. Ethical issues relating to participant role (including consent for minors) in the study is woven throughout the paper at various stages, including a description of debriefing.	Yes The study was approved according to the paper, and during the procedure section, there is some discussion relating to sensitivities to balance school/academic requirements with the demands of the project. There is no discussion of potential stress or debriefing of participants following focus groups.	Partially It is stated that the study received approval. However, no further ethical issues are reported or discussed throughout the paper.	Partially It is stated that the study was approved by the relevant ethics board. There is no discussion of the impact of the study on the young participants (talking about negative emotions can be considered a sensitive topic) though there is mention of privacy.
Data analysis	Adequate description of the analysis process, sufficiently rigorous data analysis.	Yes The authors discuss the process of data analysis used. There are multiple themes and categories developed, each supported by participant quotes. The researchers own role is critically appraised.	Yes The authors provide an adequate description of the analytic process and a clear explanation of how the theme was derived. There is a discussion of issues relating to rigour and trustworthiness of data.	Yes The authors provide a rigorous description of the data analysis process, which is clear and backed by sufficient quotes. However, the researchers own role is not discussed.	Yes A robust account of the process of inductive thematic analysis is provided, illustrated with example quotations to support how each theme was constructed. The researcher's own position is not explicitly discussed; however, a process of inter-rater reliability was employed.
Findings	Clear statement of the findings, discussion of evidence, credibility, integrity evidence both for and against.	Yes The paper gives a clear statement of findings and appraisal of evidence in light of existing work. The arguments are thoughtfully balanced, weighing up the pros and cons of SM use in terms of impact on well-being.	Yes The results are numerous, though have been carefully presented within discreet sections, with quotes presented in a large table. Findings are clearly summarised over a few paragraphs in the discussion and links are made to existing theory.	Yes The findings are clearly presented and discussed in relation to the communication literature. The authors propose a model within the findings section. Limitations are discussed.	Yes The results and findings are clearly presented and described in relation to a 'see-saw' model of emotional experience. Limitations are discussed.
Value of Research	Contribution to existing knowledge and transferability.	Yes The paper draws on its findings to make a number of specific and useful clinical and research implications which can be considered for more general populations of adolescents.	Yes The authors identify the contribution that this study has made and future directions for study. It is an advantage that following a highly theoretical discussion, some recommendations that can be applied to schools, community settings, public policy and clinical practice are provided	Yes The report is discussing how theory has been advanced into new territory in the digital era. Practical implications are given as are directions for future research.	Yes Ideas for future research directions are included. Some general implications for the management of adolescent SM use for parents/teachers are considered.

**Appendix 3** *Section A themes across research papers*

Well-being domain	Theme	Subtheme	Baker (2011)	Bell (2019)	Best (2015)	Bharucha (2018)	Burnette (2017)	Calancie (2017)	Chua (2016)	Davis (2012)	Duvenage (2020)	Jong (2016)	MacIsaac (2018)	O'Reilly (2020)	O'Reilly (2018)	Radovic (2017)	Scott (2019)	Singleton (2016)	Throuvala (2019)	Vermeulen (2018)	Weinstein (2018)
Connections	Growing relationships	Creating relationships		x		x				x		x	x			x		x	x		x
		Nurturing relationships		x						x			x		x	x		x	x	x	x
		Social support		x	x					x		x				x		x		x	
	Compromising relationships	Conflict and criticisms	x			x		x			x	x	x	x	x	x		x	x	x	x
		Disconnecting			x			x	x		x	x	x	x	x		x	x	x	x	x
Identity	Supporting Identity construction	Authenticity		x	x		x		x	x			x	x		x		x	x	x	x
		Distinctiveness		x					x				x								x
		Continuity																			x
	Frustrating identity construction	Growing self-esteem		x			x		x			x						x	x		
		Inauthentic self							x			x						x	x	x	
Learning	Promoting learning	Shrinking self-esteem		x					x			x				x		x			x
		Learning																	x		x
		Inspiration		x					x									x	x		x
	Obstructing learning	Displacement				x							x								
		Preoccupation		x		x		x	x				x								
Emotions	Positive effect on mood	Promote positive mood		x								x				x			x		x
		Regulate negative feelings												x	x				x		x
	Negative effect on mood	Worry and pressure	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x
		Exposure to upsetting content						x		x				x	x	x		x			x

**Appendix 4** *Section A thematic table with supporting quotes*

Well-being Theme	Subtheme	Source Text	Example quote
Connections			
Growing relationships	Creating relationships	Adolescents talk about making new friends, romantic partners or becoming popular in the SM world.	“it’s good cause I don’t speak very much so it’s hard to find friends like in school and things, but I can type and I don’t have to open my mouth”
	Nurturing relationships	SM is described as a useful tool to maintain and nurture real-world social groups and connections to family	“I live far away from my friends. I’d speak to them on Snapchat instead of texting. We are across the world from each other, we still can talk.”
	Social support	SM is experienced as source of support, sometimes perceived as an alternative preferred avenue of care.	“If I would to post, ‘This is the worst day ever.’ And then they would tweet at me and say, ‘Are you okay? Text me if you need anything.”
Compromising relationships	Conflict and criticisms	Adolescents describe examples of being subjected to arguments, criticisms and abuse arising from the SM world.	“There are a lot of people who are nasty on social media or say things are actually too scared to say it to their face and it’s an easy way out really.”
	Disconnecting	The experience of feeling unwanted, un-liked and rejected by peers arising from SM use. Also includes fears about	“[If] your group of friends is all hanging out and you’re not included and you see a picture of them on Instagram or Snapchat, it is hurtful to see that and be very excluded. It has happened to me before and it’s just an awful feeling.”
Identity			
Supporting Identity	Authenticity	SM is discussed as facilitating adolescents to express themselves authentically, reflect of thoughts and feelings and be experience outsider witnessing	“Sometimes there’s things that you want to say but you don’t know how to word it so that it comes out of your mouth right, but I can type it because I know that’s what I am trying to say.”
	Distinctiveness	Positively distinguishing self from others on SM	“You want to be unique and different...you don’t want to be the same as everyone else.”
	Continuity	Adolescents describe how they are able to connect to their past selves to the present identity.	“You can look back at all your old photos ... and you can just see how you’ve developed over all of that [time]. And that’s cool...”
	Growing self-esteem	One’s sense of self-worth and esteem is said to be enhanced though using SM.	“People say you look nice then you start feeling confident about yourself.”
Threatening identity	Inauthentic self	SM can encourage adolescents to present a constrained “safe” and socially acceptable version of themselves or engage in behaviours that they regret.	“I don’t know, I just felt a bit mean, I felt like a bully...and I don’t really like feeling like that, I always, if you ask any of my friends they’ll tell ya ‘she always apologises’ ... they’re like ‘you’re too nice’. It’s not my fault.”

Shrinking  
self-esteem

Adolescents describe how feedback received from SM can impact upon one's perceived value and sense of self-esteem.

"I regularly ask my youngster sister like: 'Is this a photo for Facebook?' No? Okay then I won't post it."

"I think they are saying that I'm very ugly, for me my thinking is. Then sometimes I will feel sad when people don't like my photos. 'Cause I think they're trying to say something, like maybe they're trying to say I'm ugly."  
"(I am) self-conscious when I'm posting a photo because ... you're being judged."

#### Learning

Promoting  
learning

Learning

SM is described as an interactive tool that permits a number of learning opportunities.

"What you follow and what you read... your interests. You're never going on social media typically without being interested in something."

Inspiration

Adolescents describe the benefit of being inspired by SM including positive upward comparisons.

"So I enjoy photography and maybe a little drawing ... and see what inspires me because I've had a few inspirations."

Obstructing  
learning

Displacement

Opportunities for learning (e.g. school attendance) are disrupted due to SM use.

"I have to miss college often because I just cannot get up in the mornings after logging off at 4 am"

Preoccupation

Young people describe being engrossed in the SM world for excessive amounts of time

"I think now it has become all about social media and what people say on it. It's all anyone ever talks about."

#### Emotion

Positive effect  
on mood

Promote positive  
mood

Adolescents describe feeling positive emotions in response to using social media. Other people's emotions and behaviours trigger similar emotions.

"I feel happy a lot when I'm on social media, with every social media I would say. 'Cause I could be chatting with friends, I could be seeing snaps that my friends sent me on Snapchat and they could be doing something really cool or fun or something really funny."

Regulate  
negative feelings

SM is described as a tool that can help adolescents unhook from life and de-stress from busy, challenging lives or used to occupy one's time when boredom is around.

"Yeah, it [looking through SM] makes me feel happy. Seeing someone else happy kind of makes me happy."

"Personally, it's like an escape route and when you've got a lot on your plate, it helps me distress."

"Like when you're bored, you just slip it out your pocket let's be honest."

Negative effect on mood	Worry and pressure	Adolescents discuss expectations and pressures related to SM use and worries associated with use.	<p>“You’re always wondering ‘What’s everyone else doing? Should I be on this? Should I be up?’ And then yeah- it affects my sleep.”</p> <p>“I worry a lot (that peers) don’t like something about (my post) or they do like something about it and they’ll screenshot it and ... it could go anywhere.”</p>
	Exposure to upsetting content	SM users describe time when they have come across upsetting or distressing content on SM which has had a negative impact on their mood.	<p>“They have the whole hashtags, #selfharm, #depression, and I mean like I’ve came across pictures, and I’ll literally go to that person and I’ll hit, ‘Unfollow and block,’ because I don’t want to see pictures like that. Because it honestly makes me extremely upset that I have to see pictures like that.”</p> <p>“So, that’s the only risk I have with going on Instagram- explore and finding other random pages ... I did come across some pages dedicated to self-harm. That was bad.”</p>

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**Appendix 5 Section B ethical approval information**

*This has been removed from the electronic copy*

## SECTION C: APPEDICIES

### Appendix 6 *Recruitment Correspondence with schools*

Dear ..... (Headteacher),

I am writing to seek permission to invite 16-19-year-old pupils from your school to participate in an online research survey looking at young people's use of social media sites and their mental well-being.

The purpose of this study is to find out about the links between social media use and their well-being in young people. I hope that your school's participation will be a rewarding experience, both in contributing to a growing knowledge base that can help inform parents, schools, and policy makers and also by assisting pupils in learning more about how psychological research is conducted.

The research would involve inviting young people aged between 16-19 to complete a brief online survey (about 5 minutes long), asking about their social media use, their relationships with friends, and their mental well-being. I would like them to repeat this survey after two weeks, as this helps us make better inferences about cause and effect.

This research is being undertaken under the auspices of Canterbury Christ Church University in partial fulfilment of my doctorate in Clinical Psychology, supervised by Linda Hammond, Consultant Clinical Psychologist (linda.hammond@canterbury.ac.uk). The research has been approved by the University's ethics panel and has been designed in a way to minimise any difficult or uncomfortable responses.

In return for participating, pupils will be rewarded for their time by being entered into a draw for a £50 shopping voucher. I would also like to extend an offer to you and your colleagues of a free workshop/session around the links between social media and young people's mental health if this were of interest to you.

If you are interested in learning more about this project, please contact me using the information below so I can provide further details. I am keen to work closely with the school to manage the recruitment and participation process.

Thank you for your time,

Michael Shankleman  
Trainee Clinical Psychologist  
Doctorate Programme in Clinical Psychology

Salmons Centre for Applied Psychology  
Canterbury Christ Church University,  
1 Meadow Rd, Tunbridge Wells, TN1 2YG  
[m.j.shankleman@canterbury.ac.uk](mailto:m.j.shankleman@canterbury.ac.uk)

**Invitation to participate in research**

***The relationship between social media and young people's mental well-being***

Dear head teacher,

Following our recent phone call, I would like to formally invite pupils from your school to take part in a research study.

I have provided some information below about why the research is being done and what it would involve for you and members of the school.

**What is the purpose of the study?**

There has been much debate recently about the relationship between social media and young people's mental health. The purpose of this study is to understand more about how young people use social media and how it could affect the way they feel about themselves.

I would like to hear from young people aged between 16- 19 who use social media via two short online surveys. I have chosen to recruit through schools because it provides a more ethical way to engage with young people and manage any issues that may arise for participants and interested stakeholders. It is entirely up to you to decide if you would like your school to join the study. Likewise, pupils will be offered the opportunity to take part in or decline involvement in the research.

**What will the process be?**

Pupils could be provided with leaflet/e-flyer which will include a link to the online survey. Most of the questions are multiple choice questions or rating scale questions. The surveys can be completed on any device and at a time of their choosing.

Participants will be asked to enter an email address so that they can be contacted again two weeks later to ask them to repeat some of the questions. Email addresses and school name are the only personally identifiable information we will collect, and they will be used only to match the repeated surveys. Once the two surveys are matched, they will be deleted from all records.

I am happy to discuss any other participant recruitment option that best fits with your school's needs.

**What are the possible disadvantages and risks of taking part?**

Sometimes thinking about mental well-being or stressful events can be upsetting or embarrassing. If this happens, I will be able to offer advice and help. I am happy to talk further with you to arrange the most appropriate action to take should any pupil become distressed.

Participants will also have access to a research phone number where they can leave a message for me. This phone will be monitored throughout the project. They will be

provided with the contact details for the study supervisor, Ms Linda Hammond, Consultant Clinical Psychologist, from the Doctoral Training Programme in Clinical Psychology, Salomons Centre for Applied Psychology and the head of the Clinical Psychology Programme, Professor Margie Callanan.

### **What are the possible benefits of taking part?**

I hope that this study will help to understand better the relationships between using social media and adolescent mental well-being. Additionally, each participant who takes part will be entered into a prize draw to win a £50 shopping voucher.

### **Privacy and data protection**

All the answers young people provide will be kept locked away on a password-protected device and only my supervisors, and I will have access to them. Any information I have about individuals will be anonymised and identifying information, such as email addresses, removed.

All participants will be asked if they would like to hear about the results of the study, and in what format, e.g. in an email/ letter, or phone call. The results may be also be published in a psychology journal for others to read.

Additionally, if you would like to hear more about the findings, I would be delighted to offer a meeting for staff to feedback the research findings and general discussion of the topic.

### **Who is organising and funding the research?**

The research is taking place under the auspices of Canterbury Christ Church University and has been approved by its research Ethics Committee.

### **Further information and contact details**

If you would like advice about whether you should participate or if you have any concerns about the study, please contact my research supervisor, Linda Hammond, [linda.hammond@canterbury.ac.uk](mailto:linda.hammond@canterbury.ac.uk).

If you would like to speak to me and find out more about the study or have questions about it answered, you can leave a message for me on a 24-hour voicemail phone line at 03330117070. Please say that the message is for me, Michael Shankleman, leave a contact number, and I will get back to you as soon as I can.

Kind Regards,

Michael Shankleman  
Trainee Clinical Psychologist  
Doctorate Programme in Clinical Psychology

Salmons Centre for Applied Psychology  
Canterbury Christ Church University,  
1 Meadow Rd, Tunbridge Wells, TN1 2YG  
[m.j.shankleman@canterbury.ac.uk](mailto:m.j.shankleman@canterbury.ac.uk)

*Appendix 7 Participant information e-poster*



## Research Participants Wanted!

Researchers at Canterbury Christ Church University would like to recruit 200 people aged 16-19 to take part in a short online research survey about how we use social media and how it could affect our well-being.

Each person taking part will be entered into a prize draw to win a £50 shopping voucher.



To find out more please visit:

**[thesocialmediasurvey.com](https://thesocialmediasurvey.com)**

## SECTION C: APPEDICIES

### Appendix 8 *Information and consent form*

#### **Welcome to the social media and mental well-being survey**

Hi, my name is Michael Shankleman, I'm a trainee clinical psychologist at Canterbury Christ Church University and I designed this research.



Before you decide whether you would like to take part it is important that you understand why the research is being done and what it will involve.

#### **What is the purpose of the study?**

To understand how young people use social media sites (like Facebook and Snapchat) and how they might affect our well-being.

#### **Do I have to take part?**

No. It is entirely up to you. If you take part, you are also free to leave at any time without a reason.

#### **What will happen if I take part?**

You will be asked questions about yourself and your social media use. There will also be some questions about your well-being and any stressful events that you may have experienced using social media recently.

Most of these are multiple choice questions and you can't get any wrong. You will be emailed and asked some of these questions again in **two weeks' time**.

#### **Are there any risks in taking part?**

Sometimes thinking about how we're feeling, or about stressful things can be upsetting or embarrassing. If this happens, we will understand and offer advice to help you.

If you would like to talk to someone about anything that is raised during this survey, you might find these sites helpful:

<http://bullying.co.uk>

<http://youngminds.org.uk>

There are also local services if you feel you need support from them. For more information on these please email me- [ms988@canterbury.ac.uk](mailto:ms988@canterbury.ac.uk).

I will remind you of this help again at the end of the survey.

If you think that answering questions on this topic would be upsetting, please do not complete the survey.

## SECTION C: APPEDICIES

### **What are the benefits of taking part?**

I hope the information from this study will help us to better understand how social media impacts our mental well-being.

By taking part you will be entered into a prize draw to win a £50 shopping voucher.

Completing the survey again in two weeks will double your chances to win. The winner will be notified by email at a later date.

### **Will my taking part in the study be kept confidential?**

Yes. All information about you will be kept private and anonymous, locked away on a password-protected device. The information you give will be used for this research study. It may also be used in future studies, but we will ask for approval from official research committees before doing this. Your information will be kept for a maximum of 10 years after the study has finished, after this time it will be destroyed.

### **What will happen to the results of the research study?**

Everyone who takes part will be asked if they would like to hear about the results of the study via email. The results may be published in a psychology journal for others to read.

### **Who is organising and funding the research?**

Canterbury Christ Church University. It has been reviewed by an independent research ethics committee who have approved this study.

### **Concerns and contact details**

If you would like advice about whether you should participate or if you have any concerns about the study please contact my research supervisor [linda.hammond@canterbury.ac.uk](mailto:linda.hammond@canterbury.ac.uk).

If you would like to speak to me and find out more about the study or have questions about it answered, you can leave a message for me on a 24-hour voicemail phone line at **03330117070**. Please say that the message is for me, **Michael Shankleman**, leave a contact number and I will get back to you as soon as I can.

If you have a concern about anything in the study, you should speak to me and I will do my best to answer all your questions. If you are still unhappy and wish to speak to someone else you can do this by contacting [margie.callanan@canterbury.ac.uk](mailto:margie.callanan@canterbury.ac.uk) or leave a voice message and for Professor Margie Callanan on **03330117070**

### **I have read the information about the study, and: (please select an answer)**

- I wish to take part in this study
- I would like not to participate in this study

## SECTION C: APPEDICIES

Thank you for taking the survey. I will email you again in two weeks with a link to complete some of these questions again. Completing the survey again will give you a second chance to win the £50 shopping voucher.

If you would like to talk to someone about anything that has been raised during this survey, you might find these sites helpful:

<http://bullying.co.uk>  
<http://youngminds.org.uk>

There are also local services if you feel you need support from them. If you would like more information on these please email me, Michael, I will help direct you to them: [ms988@canterbury.ac.uk](mailto:ms988@canterbury.ac.uk)

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Do you have a friend who you think might be interested in taking this survey? Please send them the following link :

**[www.thesocialmediasurvey.com](http://www.thesocialmediasurvey.com)**



## SECTION C: APPEDICIES

### Appendix 9 Section B demographics questionnaire and psychometric measures

#### 1. Demographics:

1. What is your age? \_\_\_\_
2. What is your gender \_\_\_\_m/f/other(please specify)
3. What is your ethnic group?

*Choose one option that best describes your ethnic group or background*

##### White

1. English/Welsh/Scottish/Northern Irish/British
2. Irish
3. Gypsy or Irish Traveller
4. Any other White background, please describe  
\_\_\_\_\_

##### Mixed/Multiple ethnic groups

5. White and Black Caribbean
6. White and Black African
7. White and Asian
8. Any other Mixed/Multiple ethnic background, please describe  
\_\_\_\_\_

##### Asian/Asian British

9. Indian
10. Pakistani
11. Bangladeshi
12. Chinese
13. Any other Asian background, please describe  
\_\_\_\_\_

##### Black/ African/Caribbean/Black British

14. African
15. Caribbean
16. Any other Black/African/Caribbean background, please describe  
\_\_\_\_\_

##### Other ethnic group

17. Arab
18. Any other ethnic group, please describe  
\_\_\_\_\_

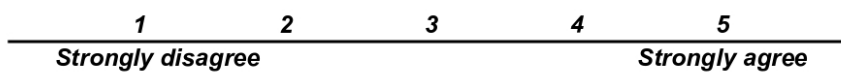
3. Name of school/university/current place of education\_\_\_\_\_
4. What is your highest level of educational achievement? (please tick one option)  
☐ Degree or equivalent  
☐ Higher education  
☐ A Level or equivalent  
☐ GCSEs grades A\*-C or equivalent  
☐ Other qualifications  
☐ No qualification  
☐ Don't know
5. What is your email (this will only be used to send you a link to the second part of the survey in 2 weeks and contact the prize draw winner).\_\_\_\_\_

## 2. Facebook Intensity Scale (Ellison et al., 2007) (adapted)

INSTRUCTIONS: In this set of questions, 'social media' refers to apps like facebook, snapchat and instagram.



Please respond to the following statements by moving the slider where 1 = strongly disagree and 5 = strongly agree



1. Social media is part of my everyday activity
2. I am proud to tell people I'm on social media
3. Social media has become part of my daily routine
4. I feel out of touch when I haven't logged onto social media for a while
5. I feel I am part of the social media community
6. I would be sorry if social media shut down

*You won't need the scale for the next two questions.*

7. Approximately how many TOTAL contacts do you have across all your social media accounts?
8. In the past week, on average, approximately how much time PER DAY have you spent actively using social media?

3. The Friendship Contingent SE Scale

INSTRUCTIONS: Please respond to each of the following statements by marking your answer using the scale from "1 = not at all like me "to "5= very much like me."

1	2	3	4	5
<i>Very little like me</i>			<i>Very much like me</i>	

- 1. I only feel good about myself when things are going well in my friendships.
- 2. My overall feelings about myself are heavily influenced by how much my friends like me.
- 3. My feelings about myself are affected when my friendships are criticised.
- 4. How I feel about myself depends on how well I am getting along with my friends.
- 5. I can't feel good about myself if I feel rejected by my friends.
- 6. When my friends and I fight, I feel bad about myself in general.
- 7. It really affects the way I feel about myself when friendships fall apart.
- 8. When my friends and I have disagreements I feel bad about myself.

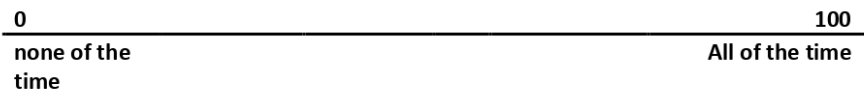
4a. The Adolescent Minor Stress Inventory (AMSI) TIME 1

(Factor 2: Relationship stress)

How often did you experience a stressful event using social media in the **last two weeks**?



Please move the slider between 0 (none of the time) and 100 (all of the time).



The next statements ask about specific stressful events that can happen online using social media sites, like arguing or being ignored.

Record how much each one happened to you on social media over the **last two weeks** using the following scale:

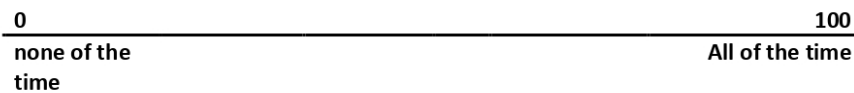
Did this happen...						
None of the time		Rarely	Some of the time	often	All of the time	
1		2	3	4	5	
Event						
1.	My friends left me out of an activity on social media					
2.	I found out that people were gossiping about me on social media					
3.	A friend I trusted let me down on social media					
4.	I argued with a friend on social media					
5.	I was ignored on social media					
6.	I was not able to be myself on social media					
7.	I was teased on social media					
8.	People rejected me on social media					
9.	I was unhappy about the way I looked on social media					
10.	I did not have enough friends on social media					

**4b. The Adolescent Minor Stress Inventory (AMSI) TIME 2**

How often did you experience a stressful event using social media in the **last two weeks** since you last completed these questions?



Please move the slider between 0 (none of the time) and 100 (all of the time).



The next questions ask about specific stressful events that can happen online using social media sites.

Record if each one happened to you on social media over the **last two weeks since you last completed these questions using the following scale:**

**Did this happen...**

None of the time	Rarely	Some of the time	often	All of the time
1	2	3	4	5

**Event**

1. My friends left me out of an activity on social media
2. I found out that people were gossiping about me on social media
3. A friend I trusted let me down on social media
4. I argued with a friend on social media
5. I was ignored on social media
6. I was not able to be myself on social media
7. I was teased on social media
8. People rejected me on social media
9. I was unhappy about the way I looked on social media
10. I did not have enough friends on social media

**5. Warwick Edinburgh Mental Wellbeing Scale (WEMWBS)**

Below are some statements about feelings and thoughts.

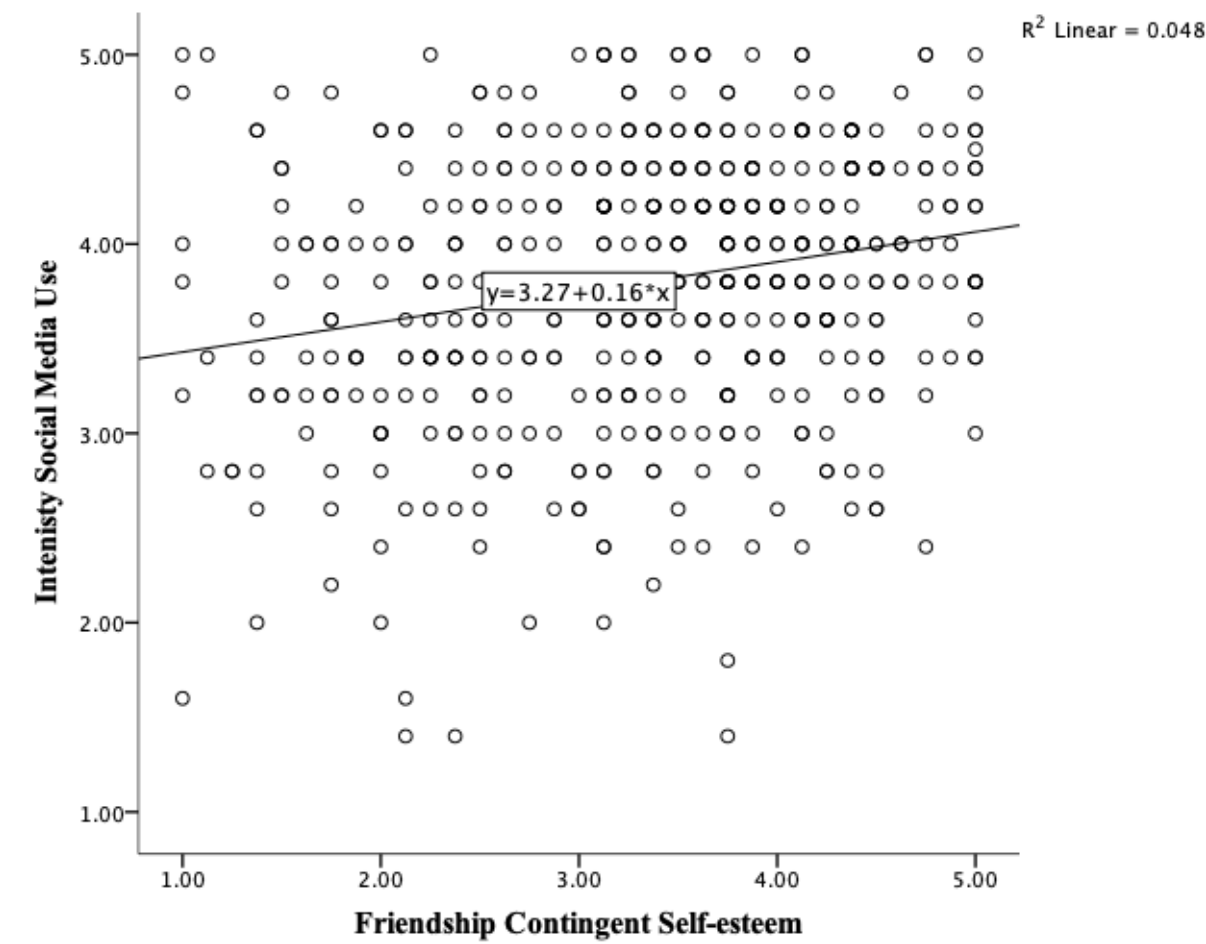
Please tick the box that best describes your experience of each over the last **2 weeks**

1	2	3	4	5
None of the time	Rarely	Some of the time	Often	All of the time

- 1. I've been feeling optimistic about the future
- 2. I've been feeling useful
- 3. I've been feeling relaxed
- 4. I've been feeling interested in other people
- 5. I've had energy to spare
- 6. I've been dealing with problems well
- 7. I've been thinking clearly
- 8. I've been feeling good about myself
- 9. I've been feeling close to other people
- 10.I've been feeling confident
- 11.I've been able to make up my own mind about things
- 12.I've been feeling loved
- 13.I've been interested in new things
- 14.I've been feeling cheerful

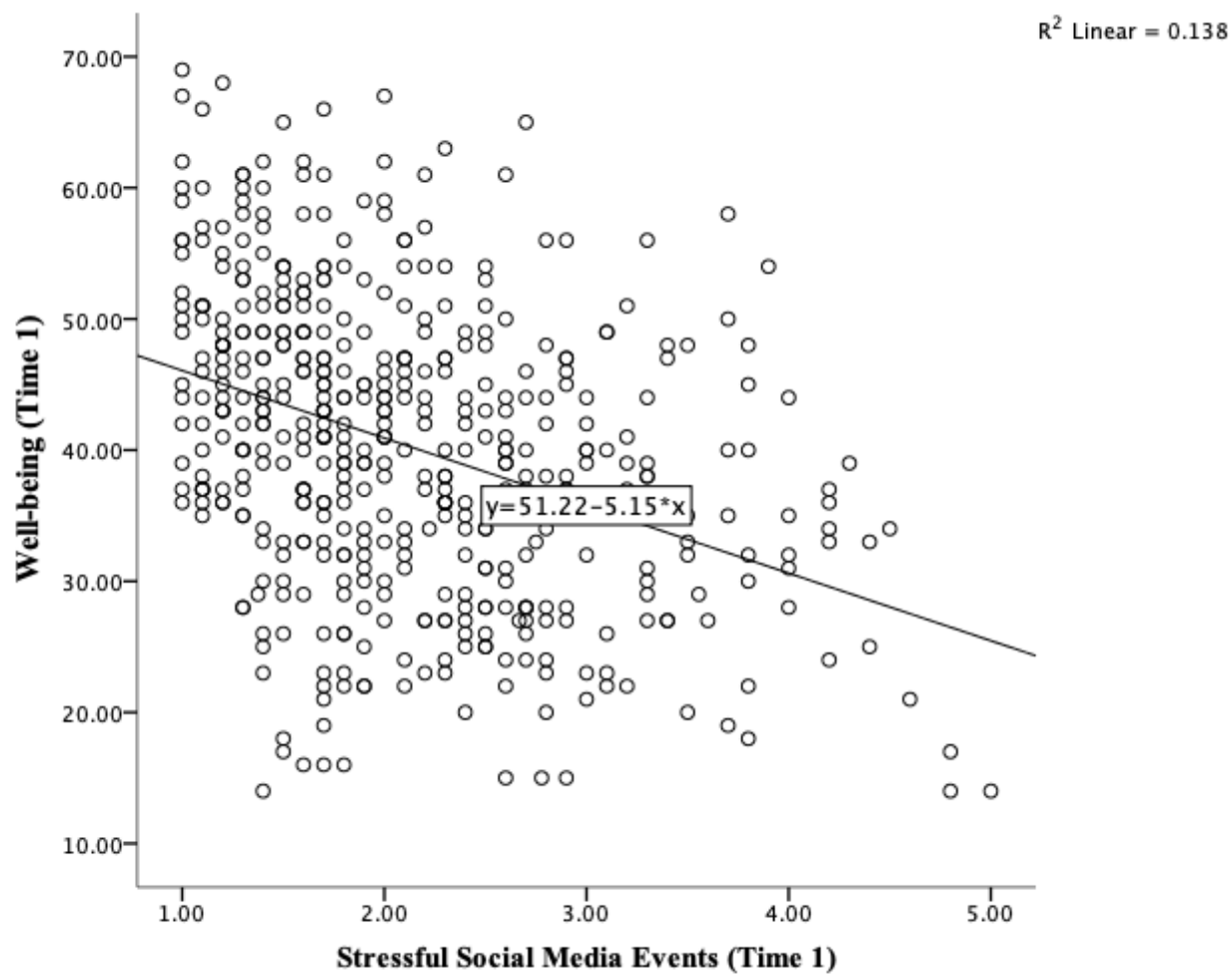
Section B Figures

**Figure 6** Scatterplot depicting the relationship between investment in social media use and friendship contingent self-esteem with regression line.



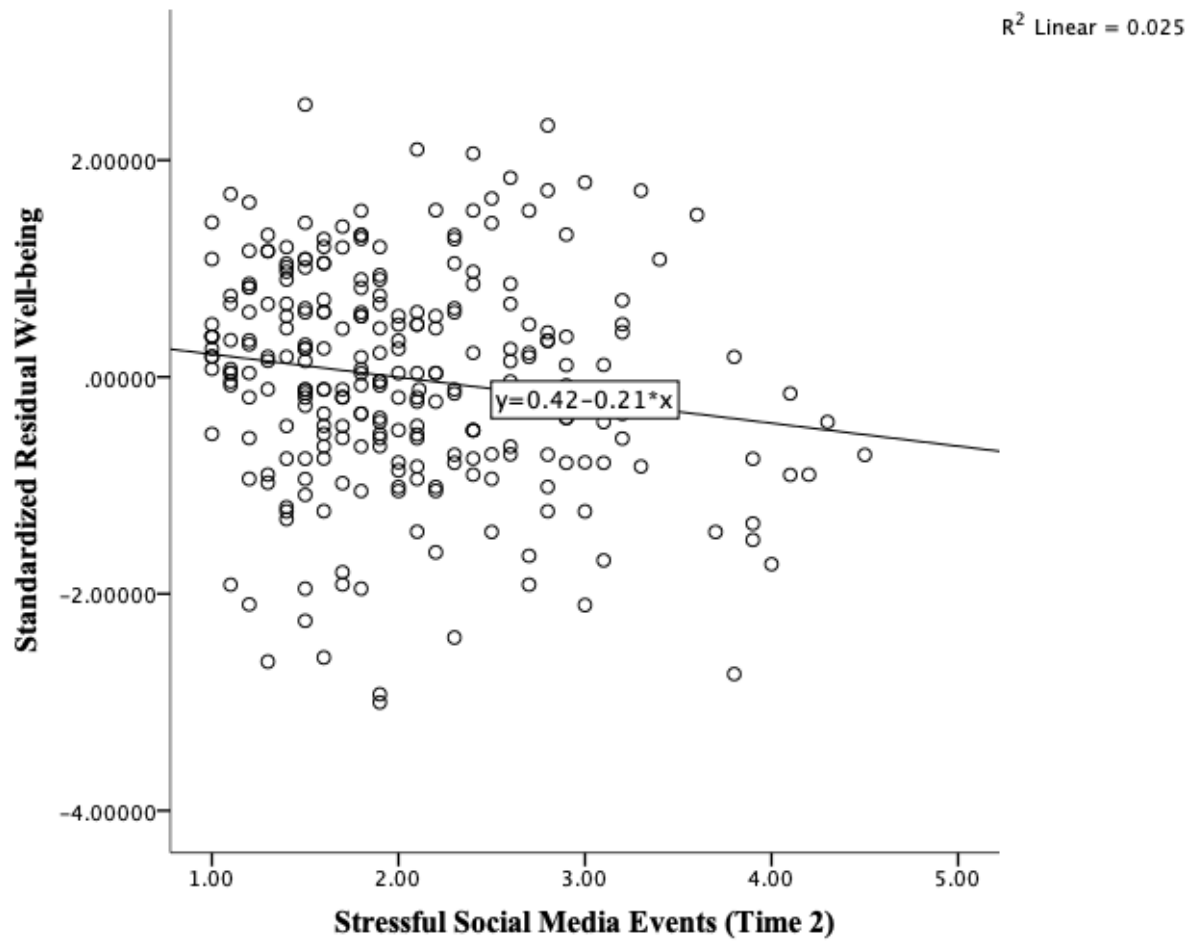
## SECTION C: APPEDICIES

**Figure 7** Scatterplot depicting the relationship between well-being and stressful social media events at time 1 with regression line.

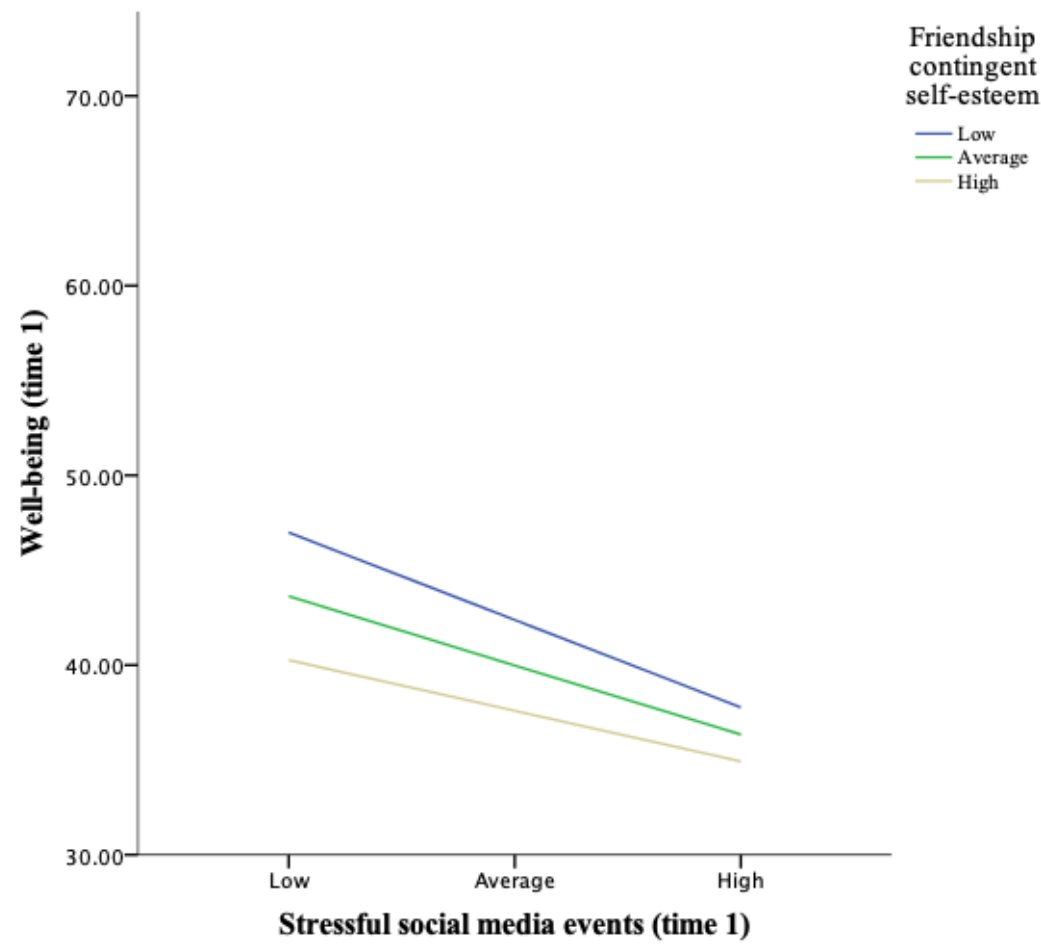




**Figure 8** Scatterplot depicting the relationship between change in well-being between times one and two (depicted by standardised residuals) and stressful social media events at time 2 with regression line.



**Figure 9** Bar chart depicting simple slopes for the moderating interaction between friendship contingent self-esteem and stressful social media events at time 1.



## SECTION C: APPEDICIES

### **Appendix 10** *End of study letter to ethics board*

Dear [REDACTED]

Study title: Adolescent Social Media Use and Well-Being: A Longitudinal Analysis of Stress, Gender and Friendship Contingent Self-Esteem.

I am writing to inform you the above research project has now been completed, and a thesis has been written to be submitted for partial fulfilment of the degree of Doctor of Clinical Psychology at Canterbury Christ Church University. A brief summary of the study follows.

#### **Summary**

Social media has rapidly risen to occupy a pivotal role within many adolescents' lives, though often proposed to have detrimental well-being outcomes for its users. Despite a proliferation of research on this topic in recent years, findings have been inconsistent, hampered by methodological shortcomings and lacking explanatory power. More is needed to be known about facets of social media use and the individual characteristics of its users, via more sophisticated methods and models. This is important, as it may provide a useful step in helping to identify young people who may be at risk of adverse psychological outcomes related to using social media, leading to better targeted preventative and supportive interventions.

This study sought to advance understanding of the relationship between social media use and well-being within an adolescent population. Specifically, it aimed to consider if self-esteem that is contingent on quality of represented a personal vulnerability factor in terms of problematic patterns of social media use (high investment). It also predicted that experiencing stressful events on social media would negatively impact on well-being in a longitudinal model. It further proposed that both gender and friendship contingent self-esteem would moderate the relationship between stress and well-being within the diathesis-stress model. These hypotheses were explored in a

sample comprised 497 adolescents (342 females, 145 males, and ten who chose not to select binary options or did not provide gender information), aged between 16 and 19 years.

Overall, the current study showed that friendship contingent self-esteem, previously shown to be a factor related to negative well-being outcomes, was significantly related to investment in social media use, also an indicator of poor mental health outcomes, in a large sample of adolescents aged 16-19. These results were demonstrated in cross-sectional data, and although causation cannot be implied, do highlight potential groups that may be more vulnerable to having their psychological well-being compromised. The study also showed a significant relationship between experiencing relationship stress on social media and well-being. Although the magnitude of relationship was small, the effect was demonstrated both in the cross-sectional and longitudinal data, which provided an indication of the temporal order of these events. Finally, using a process model of stress, neither friendship contingent self-esteem nor gender were found to significantly moderate the influence of stressful events on well-being.

The study highlighted the significant relationship between friendship contingent self-esteem on influencing potentially problematic patterns of social media use (high investment) among adolescents. It also demonstrates that adolescents' well-being can be significantly impacted through relational stress experienced online over a two-week period. It is recommended that further studies may benefit from exploring how self-esteem that is based on external contingencies may operate within a stress-diathesis model for adolescents using social media, perhaps using alternative measures. It is recommended that clinicians and parents should consider interventions that enable adolescents to foster a sense of authenticity, either on or offline, which is likely to pay dividends in helping manage SM intensity, grow self-esteem and promote well-being.

Regarding dissemination of these findings, it is intended that they be submitted for publication in *Computers and Human Behavior*.

## SECTION C: APPEDICIES

### **Appendix 11** *Author guidelines for journal submission*

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**Appendix 12** *Initial coding of findings*

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**Appendix 13** *Inductive coding process*

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Appendix 14 Example thematic maps

